The Economist

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BIG, GREEN AND MEAN

Joe Biden's plan to remake America's economy

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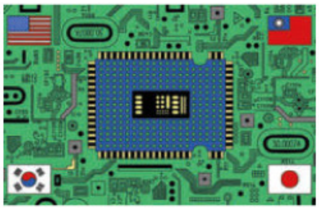

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The world this week Politics

More than 100 people were killed by a suicide-bomb at a mosque in Peshawar, a city in north-west **Pakistan**. Nearly all the dead were members of the security forces. The mosque was located in a heavily fortified area. The Pakistan Taliban was blamed for the atrocity, though it denied involvement. Last November the militants called off a peace process with the government and said they would carry out attacks across the country. Critics of the process say it allowed the Taliban to regroup.

Meanwhile, **Pakistan's government** held another round of talks with the IMF over a possible bail-out. Ahead of the negotiations the government raised fuel prices and loosened foreign-exchange controls, which sent the rupee to a new low. Foreign reserves are dwindling, causing a backlog of imports at ports as buyers scramble to find the necessary dollars to pay for goods.

Unhappy anniversary

Democracy activists staged a "silent strike" in **Myanmar** to mark two years since the country's junta seized power. Myanmar has been racked by violence since the coup, a resistance movement having sprung up to fight the army on multiple fronts. This week the junta extended the country's state of emergency for at least another six months.

Chinese health officials said the wave of covid-19 that has torn through **China** since December is "coming to an end". Last month's lunar new-year holiday appears not to have led to a new spike in cases. Independent experts said the reported decline in infections made sense, but China is believed to be undercounting covid deaths.

Antony Blinken, America's secretary of state, visited **Israel** and the **West Bank** in an attempt to reduce tensions following an increase in violence. A Palestinian gunman shot dead seven people at a synagogue in Jerusalem, the worst incident of its kind in Israel since 2008. The attack came after Israeli forces stormed a Palestinian refugee camp at Jenin, killing ten people. Israel said its troops went in to foil a terrorist attack and arrest militants. Two Palestinians were killed and two Israelis were wounded in separate shootings.

A drone attack on a munitions factory in the **Iranian** city of Isfahan was reportedly carried out by Mossad, Israel's intelligence service, from inside Iran.

Just 11% of the electorate in **Tunisia** voted in parliamentary run-off elections that were boycotted by the main parties. Critics of Kais Saied, the president, said the low turnout was a rejection of his reforms, which give the presidency near absolute power.

UN experts called for a probe into war crimes in **Mali** allegedly committed by security forces and Russian mercenaries from the Wagner Group. The experts said they had received "alarming accounts of horrific executions, mass graves, acts of torture, rape and sexual violence".

Peru continued to be seized by unrest. At least 58 people have died in protests that began in December against President Dina Boluarte, demanding new elections and the freeing of her predecessor, Pedro Castillo, who was jailed after ordering the closure of Congress. Scores of roads, especially in the southern highlands, remain blocked. Food, petrol and oxygen for hospitals are running short in some towns.

America's Justice Department charged four men in connection with the murder in 2021 of Jovenel Moïse, then president of **Haiti**. The four—three Haitian-Americans and a Colombian—were transferred to Miami from Haiti, where the case had become bogged down amid death threats against local judges.

America imposed fresh sanctions on **Paraguay's** former president, Horacio Cartes and serving vice-president, Hugo Velázquez, accusing them of "rampant corruption". It alleges that Mr Cartes, a rich businessman, had used illicitly acquired wealth to expand his political and economic power, and says both men have links with Hizbullah, a militant group backed by Iran. The two deny all the allegations.

More emergency workers who were present at or shortly after the beating that led to the death of **Tyre Nichols** in Memphis were either sacked or suspended from their jobs. Mr Nichols, who was black, was stopped by five policemen, all of them also black, for alleged reckless driving. In body-cam video they pull Mr Nichols from his car and repeatedly punch him. All five are charged with second-degree murder.

The FBI conducted a search at **Joe Biden's** holiday home in Delaware for sensitive material. No classified documents were found.

Volodymyr Zelensky warned that Russian forces have been stepping up their artillery bombardment in the Donbas region in the east of **Ukraine**. Many people fear that Russia, which has mobilised an additional 200,000 men or more, is preparing for a fresh new offensive in the coming days or weeks.

Petr Pavel solidly won the **Czech Republic's** presidential election. A former head of the Czech armed forces and senior NATO official, Mr Pavel beat Andrej Babis, a billionaire former populist prime minister, by promising to stick with the West and support Ukraine's fight against Russia. Mr Babis had been lukewarm about defending NATO allies from a potential Russian attack.

Anything you can do...

The EU unveiled a **Green Deal Industrial Plan**, which proposes relaxing the rules on state aid in the single market in order to boost investments in renewable energies and technology to achieve net-zero emissions. The plan is a direct response to the huge subsidies doled out to green industry in America's Inflation Reduction Act, which Europeans fear will drive green investment to the US.

Unions in **France** held a second day of nationwide industrial action to protest against Emmanuel Macron's proposal to raise the state retirement age to 64. Schools, public transport and fuel deliveries were all hit by strikes. In **Britain** teachers, train drivers, university staff and civil servants walked out in the biggest day of union action so far in a months-long wave of public-sector unrest over pay.

Nadhim Zahawi was sacked as chairman of Britain's **Conservative Party** following revelations of unpaid tax and a significant penalty from the tax authorities. In his letter dismissing Mr Zahawi, Rishi Sunak, the prime minister, said that he had promised to uphold "integrity, professionalism and accountability at every level". The decision came after a swift inquiry concluded that Mr Zahawi had broken the ministerial code.

Meta's quarterly earnings delighted investors, for a change, as it set out a plan to reduce costs in a "year of efficiency" and announced a $40bn share buy-back. Revenue fell in the last three months of 2022, year on year, but is expected to rise in this quarter. Still, Reality Labs, the division tasked with creating the metaverse, ran up another loss, of $4.3bn, taking its total loss for the year to $13.7bn.

Sharing the driving seat

After months of sometimes troublesome negotiations, **Nissan** and **Renault** announced a restructuring of their two-decade-old alliance, which has been under strain since the fall from grace in 2018 of Carlos Ghosn, who had run both carmakers. The main feature of the agreement is a reduction in Renault's stake in Nissan to 15% from 43%, with the remainder of Renault's shares in Nissan to be put into a French trust and the voting rights "neutralised". Each company will now own a working 15% stake in the other, which tackles a key concern of Nissan that the partnership had been unequal.

ExxonMobil, **Chevron** and **Shell** reported record annual profits of $56bn, $37bn and $40bn respectively. All three benefited from the higher price of energy amid the war in Ukraine, though prices have been falling in recent months.

Unilever appointed a new chief executive to replace Alan Jope, who is standing down in July. Hein Schumacher is currently the boss of the world's largest dairy co-operative, which is based in the Netherlands. He'll take the reins of the consumer-goods conglomerate amid investor unease about its lagging share price, and criticism from some quarters about its purpose-driven approach to selling mayonnaise.

Salesforce, which is also under pressure from investors to improve its stock performance, appointed three independent directors. This came shortly after Elliott Management, an activist hedge fund, took a small stake in the software company.

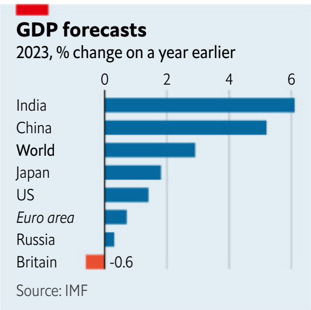
The amount of money wiped off the value of **Gautam Adani's** companies since Hindenburg Research, an American short-seller, said that their stock was artificially inflated passed $108bn. Adani Group forcefully denies the charges. More than $50bn has been wiped from the Indian billionaire's fortune.

The **Federal Reserve** lifted its key interest rate by a quarter of a percentage point, to a range of between 4.5% and 4.75%, the highest it has been since September 2007. It was the smallest increase since the Fed embarked on a course of tightening monetary policy last March.

America's **stockmarkets** had a strong start to 2023. The NASDAQ composite rose by 10.7% in January, its best start to the year since 2001. The S&P 500 was up by 6.2% and the Dow Jones Industrial Average by 2.8%. Britain's FTSE 100, a star performer amid last year's dismal market rout, also rose, by 4.3%.

GDP forecasts

2023, % change on a year earlier



Source: IMF

The IMF raised its forecast slightly of **world GDP** this year, which it now thinks will grow by 2.9%. The fund believes that "adverse risks have moderated" since its previous estimate in October, noting that global inflation is expected to fall to 6.6% (from 8.8% last year) and that China's reopening after covid lockdowns will boost demand. Europe has also proved resilient despite the war in Ukraine and high energy prices. The IMF even reckons that Russia's economy will grow by 0.3%, a contrast to a recent report from the World Bank, which forecast that it would shrink by 3.3%.

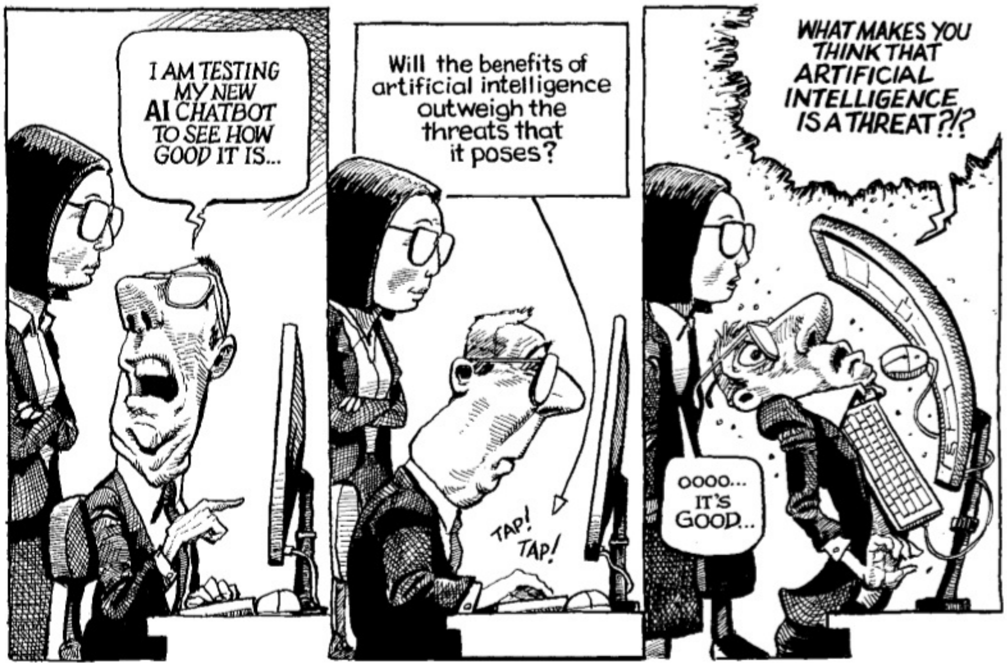
The **euro area's economy** grew by 1.9% in the final quarter of 2022, year on year, helped by government support on energy bills and mild weather, which dampened fuel demand. The currency bloc's GDP expanded by 3.5% over the whole year. Annual consumer-price inflation slowed to 8.5% in January, from 9.2% in December.

South Korea reported a trade deficit of $47.5bn in 2022, the largest since records began in 1956. In January of this year the deficit came in at $12.7bn, the highest ever for a month. Exports of Korean chips and other tech have shrivelled while prices for imports of fuel and commodities have surged. This week **Samsung Electronics** reported its worst quarterly performance in eight years. Profit from semiconductors plunged by 97%, year on year.

Intel's chief executive and other senior managers are to take big pay cuts, after the chipmaker reported a surprise quarterly loss and plunging sales. It expects to make another loss this quarter.

The original jumbo jet

Boeing delivered its final **747** to a customer, ending production of a plane that revolutionised air travel through non-stop trans-ocean flights. The aircraft's inaugural commercial flight, Pan Am from New York to London in January 1970, took just six hours and 14 minutes, though its departure was delayed by seven hours.


I AM TESTING MY NEW AI CHATBOT TO SEE HOW GOOD IT IS...
Will the benefits of artificial intelligence outweigh the threats that it poses?
TAP! TAP!
WHAT MAKES YOU THINK THAT ARTIFICIAL INTELLIGENCE IS A THREAT?!?
OOOO... IT'S GOOD...

Big, green and mean

Biden's plan to remake the economy is ambitious, risky, confused and selfish—but it could help save the planet

GET BEHIND the wheel of an electric vehicle made in Detroit and drive south. The outline of a city that was once a byword for industrial decline fades in the rear-view mirror. Head into Ohio, where the battery under your feet was made. The semiconductors that regulate its charging speed were made there too, in a vast new factory that counts the Pentagon among its biggest customers. Recharge with electricity transmitted from one of West Virginia's new nuclear plants, then start the long journey into the heartlands. After the endless wind farms of Kansas, you drive through Oklahoma's vast solar fields, then loop back to the gulf coast. The trip ends by the water, the bright sun glinting off a spanking-new green-hydrogen plant.

This is America in 2033, if the Biden administration has its way (see Briefing). In the past two years Congress has passed three bills, on infrastructure, semiconductor chips and greenery, that will make $2trn available to reshape the economy. The idea is that, with government action, America can reindustrialise itself, bolster national security, revive left-behind places, cheer up blue-collar workers and dramatically reduce its carbon emissions all at the same time. It is the country's most ambitious and *dirigiste* industrial policy for many decades. In a series of articles beginning this week, *The Economist* will be assessing President Joe Biden's giant bet on transforming America.

Mr Biden is taking an epoch-making political gamble. He is acting on so many fronts because he had no choice. The only way to build a majority in Congress was to bolt a Democratic desire to act on climate change onto hawkish worries about the threat from China and the need to deal with left-behind places in the American heartland. On its own, each of these concerns is valid. But in terms of policy, the necessity to bind them together has led America into a second-best world. The goals will sometimes conflict, the protectionism will infuriate allies and the subsidies will create inefficiencies.

To grasp the scale of what is under way, follow the money. The Infrastructure Act makes $1.2trn available over ten years for roads, bridges and cables for a new green grid. The CHIPS Act, which promotes making semiconductors in America, contains $280bn of spending. The Inflation Reduction Act contains $400bn in subsidies for green tech over ten years; some analysts suggest the true figure will be $800bn. The money is only part of the picture. With it comes a plethora of rules, from requirements that batteries be made in North America, to restrictions on tech imports and exports on grounds of national security.

A giant plan that has so many disparate objectives does not simply succeed or fail. Its full consequences may not become clear for many years. However, you do not have to be Ayn Rand to question whether the government is up to managing such an ambitious set of projects. For example, because American environmentalism has put preservation first, it takes more than a decade to obtain the necessary permits to connect a renewable project in Wyoming to California's grid. Likewise, if industries are encouraged to focus on lobbying rather than innovating and competing, then costs will rise.

And some of the aims are contradictory. Requiring jobs to be in America would be good for some workers, no doubt. But if green products such as wind turbines become more expensive, then the green transition will become more expensive, too. And if other Western countries lose vital industries to America as they chase subsidies or duck import restrictions, then the alliances that underpin America's security will suffer as a result.

Indeed, the entire enterprise may be hard to pull off for lack of affordable workers. The plan would never create lots of solid working-class jobs: in today's manufacturing, robots staff the assembly lines. But America may also struggle to find enough of the short-term construction workers needed to build out green infrastructure. Unemployment is at 3.5%, a 50-year low. More immigration could help fill vacancies, but it is restricted. Policies intended to help women rejoin the labour market, such as early education, were stripped out of Mr Biden's plans. Green subsidies therefore risk being diverted into higher wages.

The administration has an answer for its critics. It says that, if America can develop new technologies, build supply chains that are less dependent on China and drive down the cost of clean sources of energy, everyone will be better off. And America has significant advantages: a rich internal market, vast landscapes for solar and wind farms, pipelines for transporting hydrogen and reservoirs in which to store carbon. Its universities and venture capital make it a hub for green innovation. The country is already sucking in foreign investment to work alongside the subsidies. And the policy enjoys a degree of political consensus. Although Republicans are less keen on the green bits, they are even more hawkish on China and even more protectionist.

To help the plan realise its good intentions, three things need to happen. First, the effort going into boosting domestic industry needs to be matched by a sustained programme of trade diplomacy. One way to build a bloc in favour of a cheaper green transition would be to give foreign-made goods access to American subsidies (so long as they are not Chinese, Iranian or Russian). Second, subsidies should tilt towards technologies that are not yet commercially viable, such as new types of nuclear reactor and carbon capture and storage. Public money spent reshoring the manufacturing of solar panels that could be produced more cheaply elsewhere will be wasted. Third, to build new subsidised infrastructure, America needs reform of its permit laws, perhaps with a federal law that supersedes state and local concerns (see United States section).

Half-full

For better or worse, Mr Biden's blueprint for remaking the economy will change America profoundly. It may succeed in helping deal with an authoritarian China, keeping voters at home from embracing a more radical and destructive politics, and defying the gloomier predictions about the effects of climate change. But be under no illusions, it is audacious to believe that the way to cope with three problems which are too hard to tackle separately is to deal with them all at once. ■

India Inc

Hindenburg v Adani

Nagging questions over the Adani empire won't go away

ON THE SURFACE it was a huge mismatch—David versus an army of Goliaths. Yet in a matter of days a report by Hindenburg Research, a fledgling short-selling firm, resulted in a fall of over $50bn in the wealth of Gautam Adani, hitherto one of the world's richest men and a close associate of Narendra Modi, India's prime minister. Along the way, a $2.5bn share offering by Adani Enterprises, flagship of the Adani Group's listed companies, was derailed. Hindenburg alleged that Adani is a giant con. Adani countered that the charges are baseless and, moreover, count as an attack on India itself.

Mr Adani is a big target. His empire has expanded rapidly in recent years, and now includes everything from ports to power plants. Its share offer initially closed on January 31st with enough interest to seem a success, underpinned by anchor investors including International Holding Company, a firm based in Abu Dhabi. But after a sustained rout in share prices, Adani suddenly cancelled the sale on February 1st, saying it would be morally wrong to impose losses on its sponsors. Global investors are now left with nagging questions about the finances of one of India's biggest firms.

The allegations are startling. Hindenburg claims that offshore shareholding entities based in Mauritius and elsewhere are not independent investors but fronts for the Adani family. These entities, it alleged, accounted for much of the trading in the group's shares and pumped up the prices of Adani's listed companies to stratospheric levels. The short-seller further claims that Adani uses offshore vehicles to hide losses and to launder money through the listed companies.

In a 413-page document released on January 29th, the Adani Group rebutted these charges, arguing they had already been thrown out by India's courts and regulators. Adani has also threatened legal action (bring it on, said Hindenburg). Yet its defence has failed to instil confidence. The share prices of Adani firms have kept falling—around $100bn has been wiped off the group's market value. Some global banks are reportedly refusing to take Adani bonds as collateral for their private-wealth clients.

Verifying the more startling charges in Hindenburg's report is no straightforward matter, and Adani's denials have been forceful. The allegations may ultimately be settled by legal action outside India. What seems clear is that Adani shares are closely held and thinly traded; that the group's acquisition spree was fuelled by borrowing; and that the explosion in share prices was at odds with the capital-heavy, utility-like businesses it owns—where investors cannot expect explosive profits.

The drama of recent days also reveals the risk of relying too much on tycoons to propel investment. For many in India, including the Modi government, firms such as Adani are crucial vehicles for building much-needed roads, railways, airports and green power plants. Yet such a model ties the fate of India's infrastructure to the integrity of its tycoons. Adani alone now accounts for 7% of the capital spending of India's 500 largest listed companies. If the group makes good on its plans over coming years, that share will rise.

All the more reason, then, to clear the air around the firm. India needs to mobilise domestic savings to invest in its future. It will also continue to rely on foreign capital and expertise to finance its development. So it is important that the country's capital markets are above board and seen to be so. A good place to start would be for the Securities and Exchange Board of India, the markets regulator, to declare the status of any ongoing probes into the Adani Group.

India has an exciting growth story. It has a young population, a vast and increasingly integrated single market, and a thriving business culture. But were people to lose faith in the finances of the country's largest firms or the oversight of its institutions, the shine would quickly come off. ■

Japan's monetary policy

Out of control

The Bank of Japan should stop defending its cap on bond yields

CHANGING THE helmsman halfway through a tricky manoeuvre at sea is a risky prospect. Yet that is what is happening in Japan, where the government will soon propose a successor to Kuroda Haruhiko as the head of the Bank of Japan, just as the central bank prepares to tighten monetary policy for the first time since 2007. In December, amid rising inflation and speculative pressure, the bank raised its cap on ten-year government-bond yields, from 0.25% to 0.5%. The next governor is expected to raise the cap further, or even to abandon the policy, which is known as yield-curve control.

Unfortunately, the regime change is not off to a good start. Lifting the cap has only increased bets against it. Since December the Bank of Japan has had to defend the higher cap by buying bonds worth a staggering $240bn, nearly 6% of Japan's GDP and about three times the pace of purchases in the preceding three months. The bank seems determined to keep the cap in place until a change of leadership is complete. Doing so is a costly mistake. It should change course now.

Yield-curve control has been the most awkward part of the monetary-policy toolkit developed after the global financial crisis of 2007-09. Having run out of space to cut short-term interest rates, central banks tried to drive down long-term bond yields

▸▸

instead. To that end, they bought bonds with newly created money. By 2016, however, the Bank of Japan's balance-sheet was ballooning, and it introduced a yield cap in the hope of keeping yields low while making fewer purchases. The idea was that yields would adjust purely on the expectation that the central bank would act if necessary to enforce the cap. And for a time, the policy worked as intended.

As inflation has risen, however, such caps have lost their credibility. In 2021 Australia suddenly abandoned its experiment with yield-curve control as investors began betting that interest rates would need to rise to fight inflation.

In Japan the situation is more finely poised, because inflation has been too low for decades and ongoing stimulus may be necessary to ensure the Bank of Japan hits its 2% inflation target over the next few years (see Finance & economics section). But Japan's policy is far more aggressive than Australia's, which capped bonds at a three-year, rather than a ten-year, horizon. A small change in the outlook for the next decade is enough to bring a ten-year cap under pressure.

Investors know that Mr Kuroda's successor is likely to adjust and eventually abandon the policy—especially if it is a hawk, such as Yamaguchi Hirohide, a former deputy governor. The result has been rampant speculation, forcing the bank to hoover up more bonds: exactly what yield-curve control was supposed to avoid. The bank now owns more than half the Japanese government-bond market, including two-thirds of bonds with a maturity between one and 11 years. Bizarrely, its accounts imply that it owns more than 100% of the issuance of some bonds, having lent out its purchases only to buy them back again.

For investors, selling bonds to the bank seems a one-way bet. Yields move inversely to prices. Why own a bond that will fall in value as the cap is lifted, if you can sell it for a higher price today? But for the Bank of Japan the purchases could prove correspondingly costly. We calculate that a rise in bond yields of just 0.25 percentage points would cause paper losses of over $60bn. The bank's cash flows will suffer if short-term rates rise before the bonds mature, forcing the bank to pay interest on the reserves it has created in the banking system to finance its purchases. With every bond bought, the potential loss mounts.

Some argue that the yield cap must be maintained until after wage negotiations in the spring, so that it stimulates average pay rises high enough to be consistent with price growth of 2%, ensuring Japan's escape from decades of low inflation. But the limited extra stimulus brought about by the cap is not worth the possible losses, which pose a threat to taxpayers. Instead, the central bank's most important tool is its short-term interest rate, which it can still pledge to keep low to act as a stimulus.

Signalling the end of a price peg is unwise, because it attracts speculation and forces a messy exit. It is too late to avoid that. Everyone knows that the end of yield-curve control is coming in Japan. The central bank—whoever is at its helm—can at least kill off the policy before it loses a lot more money. ■

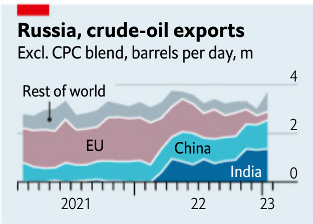
Global energy

Dodged penalties

The West's oil sanctions on Russia are proving to be underwhelming

IN DECEMBER THE West took aim at Russian oil revenues, unleashing the biggest package of energy sanctions ever imposed on a single country. Europe, which had been a big buyer of Russian seaborne crude, banned imports of the stuff. It also barred its long-dominant shippers, lenders and insurers from facilitating the sale of Russian crude to other buyers—unless the oil was sold below a "price cap" of $60 a barrel set by the West.

Two months in, plenty of people seem to think that the cap is a big success. A second round of European sanctions, on diesel and other refined products, is due to come into force on February 5th. Unfortunately, our reporting suggests that the scheme is not biting.


Russia, crude-oil exports
Excl. CPC blend, barrels per day, m

The December ban-and-cap policy has not succeeded in curbing sales of Russian crude. After a lull while European firms worked out how to comply with the new price cap, shipments have resumed at pace—directed not to Europe, but to China and India instead. Russia's exports of unrefined oil, excluding CPC, a Kazakh blend shipped from Russia, averaged 3.7m barrels a day in the four weeks to January 29th. That is the highest level since June, and more than in any four-week period in 2021.

An advocate of the price cap would say that this is proof of the scheme's success. The point, after all, was to ensure that Russian oil continued to flow, keeping the global market stable, but to limit the price of it so that the profits for Russia's president, Vladimir Putin, were kept in check. The cap, they argue, gives buyers negotiating power; the longer export routes also raise freight costs, for which Russia must compensate customers.

As evidence that the cap is working, many also point to the gap in price that Western agencies report between Brent, the global benchmark, and Russia's Urals crude. This emerged soon after the invasion of Ukraine, but widened a little after the embargo, to $32 a barrel. Thus Russian oil now trades at a discount of 38%. On January 10th Janet Yellen, the American treasury secretary and an architect of the price cap, said that the scheme was making progress towards its goals.

The problem, however, is that price-reporting agencies have not adapted their methods to a world in which Russian oil no longer sells through channels they can observe. Whereas European refiners and traders used to share data with price-trackers, Indian ones do not. Agencies also used to rely on publicly available indicators to estimate shipping costs between Russia's western ports and European oil terminals. Rates for ferrying oil from Russia to Asia, by contrast, are set in private.

The result is that the discounts cited by Western officials are inaccurate—and often exaggerated. Customs data from India and China show that they paid more for their Urals oil this winter than is widely thought. Another reason true pricing is hard to assess is that everyone has an interest in pretending that prices are low. Russia's oil firms are keen to minimise their tax bills and Indian refiners want to squeeze other suppliers.

Even more striking is the extent to which Russia's export machine has become less reliant on the West's shipping and financing infrastructure, and has therefore escaped the scope of sanctions. As we report this week, a shadow trade that uses a parallel system is booming (see Finance & economics section). Before December, more than half of western Russian crude was handled by a European shipping or financing firm. That share has since fallen to 36%.

Could the next batch of sanctions, on refined oil, do more damage? At first glance it seems that they could curb Russian exports of diesel and other products in the near term. From February 5th, Europe will no longer buy such fuels, and it will make the use of its shipping and insurance firms subject to compliance with a price cap. Russia will not easily find buyers to make up for the loss of demand from the EU: both China and India have refineries of their own. And substituting for Europe's refined-oil tankers will be hard. A chunk of Russian refined products, which account for a third of the country's oil-export revenues, could thus go unsold, raising global prices.

Yet over time these effects are likely to fade. Unable to sell refined oil, Russia would probably boost its capacity to export more crude instead, further energising the shadow trade. Europeans may find themselves turning to China and India for diesel, but it would increasingly be produced from Russian crude. As more Russian oil flows outside the West's control, blockades will become even less effective. For the West, the lesson is that sanctions are no substitute for sending Ukraine more money and arms. Shunning Russia's oil will not win the war. ■

Latin American democracy

Dousing the fire

Peru is more divided and unstable than at any point since the 1980s. It needs a fresh election

It began on December 7th when Pedro Castillo, then the president of Peru, abruptly announced on television that he was ordering the dissolution of Congress, dominated by his opponents, and a takeover of the judiciary, which was investigating him for corruption. For Peruvians the announcement brought bad memories. In 1992 another president, Alberto Fujimori, carried out a similar "self-coup" against Peru's democratic institutions, sending the army to do the job. Mr Castillo had no such support and he was swiftly arrested. Congress impeached him for breaking the constitution and appointed Dina Boluarte, his elected vice-president, in his stead.

Two months of mayhem have followed (see Americas section) in which dozens have died, many seemingly killed by the security forces. Protesters have blocked scores of roads, especially in the Andes. They have launched violent attacks on five airports. Numerous courthouses, prosecutors' offices and police stations have been vandalised. The economic damage will take years to repair. The protesters' main aims are to force Ms Boluarte to resign, to close the hated Congress, and to secure a referendum on calling a Constituent Assembly that will write a new constitution. Making things worse is that several foreign governments, notably those of Mexico, Colombia and Bolivia, support the insurrection against what they claim, speciously, was a "coup" against Mr Castillo.

What explains all this fury? Mr Castillo, a rural schoolteacher and trade union leader of indigenous descent and no political experience, was narrowly elected in 2021 at the head of a far-left coalition. He misgoverned woefully. But a third of the country, mainly in the highlands, sympathises with him and his claim that the right and the Congress prevented him from governing. Many more abhor the Congress, whose members seem more interested in looking after themselves than in legislating for the general good. They blame Ms Boluarte for betraying the election result by allying with the right, though she had little choice.

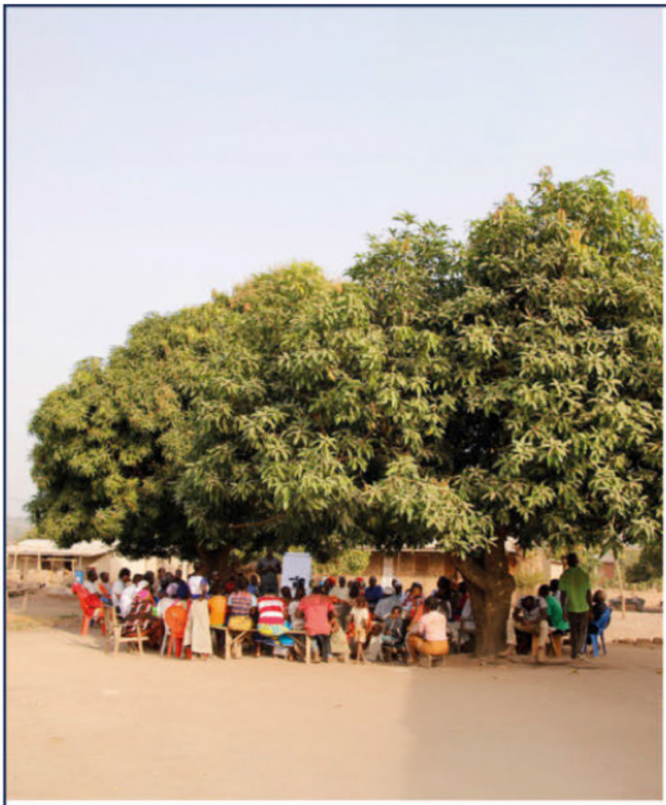
However, the protests are fuelled by more than spontaneous popular anger. Far-left groups, illegal miners and drug traffickers are orchestrating them so as to force through the Constituent Assembly. It is a familiar tactic and a lamentable one: Hugo Chávez in Venezuela and other populist leftists in Latin America have used such assemblies to win themselves absolute power.

The obvious way to calm the country would be to call a fresh general election. In December Congress approved a plan for one in April 2024, two years early. The idea was to give time for political reforms. Now many, including Ms Boluarte, say the election should happen in the second half of this year. Congress is reconsidering, but approval is far from assured. Disgracefully, some on the right are stalling to hang on to their lavish salaries, and the far left's support for an election is contingent on securing a Constituent Assembly. That would be a big, perhaps irrevocable, mistake. No settled majority backs it. The constitution does need reform, but its pro-market economic chapter, which the left wants to overturn, has underpinned Peru's rapid growth and poverty-reduction.

Two other steps are needed. The government should announce a swift and independent inquiry into protesters' deaths. And the police should arrest, and courts imprison, the ringleaders behind the violence. Blocking highways and seizing airports are not a democratic right. In time, Peru will need better-trained and -equipped police who can control crowds by non-lethal methods, especially in the provinces.

Many factors lie behind Peru's chronic political instability. A ban on the re-election of legislators, regional governors and mayors undermines accountability and the chance of a political career. It should go. Peruvian society is more polarised today than it has been since at least the 1980s. Bridges need to be built.

Peru deserves help from its neighbours, but they have meddled instead. The populist leaders of Mexico and the others support a coup against democracy when it is by one of their own. They reject the political pluralism that legislatures embody, because their implicit belief is that only the president has real democratic legitimacy. Brazil recently suffered an attempted coup by the far-right supporters of Jair Bolsonaro, the defeated former president. Peru is suffering one from the far left. In Latin America the enemies of democracy lurk at both extremes. ■



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Jane Leighton
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Letters

The energy of the sea

I read your article on the possibilities for green energy from the North Sea with great interest ("Europe's new powerhouse", January 7th). Clearly there are opportunities for industries to start up or relocate to the North Sea. The region boasts a skilled workforce, stable institutions and an industrial culture. But the biggest additional asset is the potential for cheap and plentiful energy, mostly from wind power. Few other places in the world can match this.

All this wind energy is obviously renewable and can replace the existing use of fossil fuels. However, your article is unrealistically optimistic in this regard. At present, the six main countries that border the North Sea have a combined annual energy output of around 830 gigawatts. This includes renewable energy output of about 90GW. In order to achieve the goal of 80% of energy output coming from non-fossil sources by 2050, this 90GW must be increased to 670GW. This would require 240 nuclear-power stations of the size of Hinkley C, or 300 wind farms on the scale of the nearly completed Dogger Bank. Despite the skilled workforce and the plentiful winds, I very much doubt that this can be achieved within the next 28 years.

S.R. GARRARD
Chartered engineer
Romsey, Hampshire

Reforming the police

The cover strap to your January 21st issue describing London's police as "rotten" was unfair to the absolutely overwhelming majority of the 34,000-strong force who are not criminal, corrupt, misogynist or racist ("Predators in the police", January 21st). They do an extraordinary job protecting us every single day. That said, there clearly are areas where poor leadership and an ingrained toxic culture have so comprehensively taken hold that only radical surgery to cut them out will do.

As a comparison, a culture of bullying had taken hold in the British army in the 1980s at training establishments for recruits and for newly trained soldiers. These were termed "initiation rites". This was eradicated through severe and uncompromising disciplinary action which, in the case of one unit, involved the sacking of the commanding officer, regimental sergeant major and a whole swathe of the unit's hierarchy, not because they had participated in the abuse but because they had not prevented it.

In another instance, an entire company of soldiers was dismissed because they would not co-operate with service police investigating a serious assault on a senior officer. In the early 1990s the Canadians went one stage further and disbanded an entire regiment when it was found to be irredeemably infiltrated by neo-Nazi groups. Sometimes only the boldest action, including cutting off the rotten head, will suffice.

In all those instances, the essential values and value of the organisation were actually reinforced.

SIMON DIGGINS
Colonel (retired)
Rickmansworth, Hertfordshire

Declining research quality

One reason why economics may be running out of big new ideas is that funding evaluation cycles are too short for the pursuit of path-breaking research ("Downsizing", January 14th). A study that I led analysed more than 3m research papers in Britain over two decades. British researchers are subject to regular government evaluations, and the data suggest these assessments drive academics to prioritise quantity over quality.

There is a significant rise in the number of papers published just before a government deadline, but also a drop in quality: lower-impact journals, fewer citations, more retractions. This trend reverses abruptly after each evaluation cycle, indicating that freedom from these deadlines allows for more novel and longer-term research.

Governments and funding institutions around the world place similar evaluation demands on researchers. All this close monitoring may indeed foster responsible spending, but evidence suggests it comes at a fundamental cost to research itself. Those who design research assessments should consider varying cycle lengths across different fields, enabling researchers to pursue riskier, but therefore more innovative projects.

DR MOQI GROEN-XU
Senior lecturer in economics and finance
Queen Mary University of London

GPs under pressure

Strained primary-care systems are at the heart of health-care problems around the world ("The health-care collapse", January 21st). Family doctors in Britain see over a year's worth of accident and emergency patients in a month. When our systems aren't adequately resourced desperate patients bypass us and go directly to hospitals, which aren't set up to manage bad backs and sinusitis. We handle 90% of all interactions in the National Health Service for less than 10% of the budget, receiving £13 ($16) a patient per month (less than my pet's health insurance).

We are seeing 15% more patients than in 2019 with less money and fewer doctors. After the pandemic, patients are coming to us with more advanced illness, and our ageing population requires ever more care and attention. With fewer resources to meet rising demand and complexity, preventive consultations tend to get squeezed out, storing up problems for the future.

You are not the only ones to overlook these structural issues. Political solutions invariably focus downstream, on hospital-centric manifestations of problems that are fundamentally to do with primary care. Health systems won't get back on their feet until our battered and burnt-out workforce is resuscitated.

DR LUKE ALLEN
WHO health-systems consultant
Oxford

Still reliving the war

The American South has clearly not recovered from losing the civil war (Back Story, January 14th). In 1963 I went to school less than 100 miles from Stone Mountain, a Confederate monument. In history lessons two chapters on "The War between the States" included an illustration of slaves weeping after being told by their kindly master that he hated to force them to leave his plantation, but the North decreed that they must. Our elderly instructor refused to teach those chapters, because the emotional scars of the war were still too fresh for her.

Vamik Volkan, a psychoanalyst nominated for the Nobel peace prize, devoted much of his career to studying the group psychology of chronic ethnic conflict. He concluded that it persists partly because groups retain their cohesiveness thanks to an unconscious refusal to mourn and move on from past collective traumas.

RICHARD WAUGAMAN
Washington, DC

Long overdue

Joe Biden's mishandling of classified documents raises a big question ("Sloppy Joe", January 21st). Does the federal government not have a system to manage classified materials? If Blockbuster, a bankrupt video-rental firm, was able to track my overdue copy of "Caddyshack", then surely those in Washington can devise a similar scheme.

DAN PESEK
Minneapolis

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Rosy for riveters

DETROIT

Can a revival of manufacturing make America stronger, greener and richer?

REBUILDING AMERICA'S ECONOMY

At its apogee in the 1930s Ford's River Rouge complex, just outside Detroit, employed some 100,000 people and produced a car every 49 seconds. Diego Rivera, a Mexican artist, painted a series of murals depicting the heroic workers and futuristic machines, working in harmony to usher in a new era of prosperity.

Almost a century later River Rouge is getting a new lease on life. Construction workers are busily expanding the assembly lines that produce the F-150 Lightning, the electric version of America's bestselling pickup. There is less clanging than when Rivera visited, and more whirring. Mechanical claws effortlessly whisk vehicle frames from place to place. Self-driving carts glide around the factory floor. Ford is hoping for a surge in sales thanks to lavish new tax credits for people who buy American-made electric vehicles. But it is not just the factory that is enjoying a renaissance: so is the dream that River Rouge once embodied, of an America made prosperous by multitudes of jobs in cutting-edge manufacturing.

Over the past two years, urged on by President Joe Biden, Democrats in Congress have enacted a series of laws to revive manufacturing in America, as part of a $2trn overhaul of the economy. The CHIPS Act, passed in July, includes $39bn to spur domestic production of semiconductors, along with even bigger investments in research and development. The Inflation Reduction Act (IRA), approved in August, boosts clean energy in many ways, including tax credits for manufacturing. The Congressional Budget Office estimates these will cost $37bn over a decade, although it could be much more, since the IRA does not limit the total value of credits that can be claimed. There are indirect subsidies for manufacturers, too, in the form of tax credits for consumers who purchase American-made goods. Then there are a multitude of factory-friendly regulations, such as "Buy American" rules for government procurement. In 2021 Congress also approved $1.2trn in spending on infrastructure, intended in part to make American manufacturing more competitive.

The subsidies apply mainly to two industries: clean energy and semiconductors. The intention is not just to spur manufacturing, but also to curb climate change, limit dependence on China and pep up parts of America that have fallen behind. This ambitious agenda helps explain why the laws feature so many complicated and overlapping incentives.

Some take the form of tax credits tied to production volumes: $3 for every kilogram of green hydrogen, for example, or $35 for every kilowatt-hour of battery capacity. Solar panels, wind turbines and even certain minerals used in clean technology benefit from similar credits. There are tax credits for investments, as well, in manufacturing facilities producing gear used in all manner of clean-energy projects, from geothermal power to carbon capture and storage.

The same industries will also be boosted by plentiful indirect subsidies. Investment in low-carbon power-generation will enjoy bigger tax credits if the equipment involved is made in America. The same is true of the power generated by such facilities. By the same token, tax credits for consumers who buy electric cars can be claimed only if the cars in question are made in North America.

States are doling out handouts, too. Georgia recently provided over $3bn in financial incentives to two carmakers building electric-vehicle factories, in addition to other perks. Michigan, dismayed by Ford's announcement in 2021 that it would build new factories in Kentucky and Tennessee, is mimicking southern states by assembling plots for manufacturers that might invest in the state, before specific companies have expressed interest. The idea is to help firms build factories as quickly as possible.

Pumps and accelerators

These elaborate efforts to foster certain industries already seem to be bearing fruit, despite a slowdown in manufacturing more broadly (a prominent index of manufacturing activity slid in January). Carmakers announced $68bn-worth of projects in 2021 and 2022—the industry's biggest building boom in decades. Since Mr Biden became president, the White House points out proudly, manufacturers have announced some $290bn in investment.

Much of that investment was initiated before Congress approved the new subsidies. But since the IRA became law, First Solar, a manufacturer of solar modules, has said it will expand production in Ohio and build a new factory in Alabama. In January Hanwha Qcells said it would spend $2.5bn to increase its output in Georgia by a factor of five.

Chipmakers have announced a similar surge of investment, with $200bn spread across 16 states. TSMC, a Taiwanese firm, is building a new factory in Arizona, Intel one in Ohio and Micron one in New York. Smaller firms that supply these chipmakers are also making big plans. Tom Stringer of BDO, which advises manufacturers about where to build new factories, is assisting several dozen chip suppliers scouting for good locations.

All told the IRA may spur $1.7trn in public and private investment, reckons Credit Suisse, a bank. The spending unleashed by it, the CHIPS Act and the infrastructure bill are "among the most significant investments that we've ever made", Janet Yellen, the treasury secretary, declared last year. On a visit to TSMC's new factory in Arizona in December, Mr Biden exulted, "We're making things here in America and shipping the products overseas rather than shipping the jobs overseas to make things overseas and bring them back home."

All this marks a huge reversal. For the past 40 years, successive American governments have followed a different prescription for growth: free-trade deals, low taxes and relatively little regulation, especially about where things are made. Indeed, America used to bemoan such policies when other countries adopted them.

Manufacturing has long been declining as a share of America's GDP. Most economists, however, view this as natural. As countries become richer, a rising share of output routinely shifts from manufacturing to services. In absolute terms, after all, manufacturing output has continued to grow (see chart 1 on subsequent page).

Admittedly, the same is not true of jobs in manufacturing, which have declined outright as factories have become more efficient. They fell from a peak of 19.5m in 1979 to a nadir of 11.4m in 2010, before climbing again slightly to 12.8m today. As a share of total employment, the drop has been even more precipitous (see chart 2 on subsequent page).

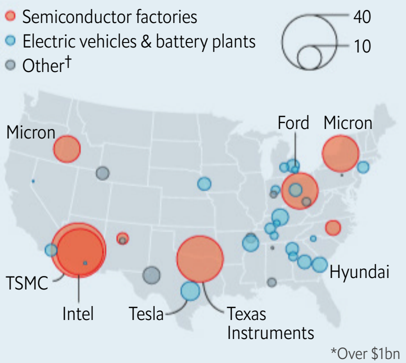
Economists tend to assume that Americans who lose factory jobs will be able to find other types of work. That confidence has been borne out by the unemployment rate, which has declined even as factory jobs have evaporated, and currently stands at 3.5%, its lowest for 50 years.

Politicians have not tended to be so blasé, however. That is because the new jobs are often not in the same parts of the country as the old ones were, leaving some former industrial hubs down on their luck. Donald Trump won the presidency in part by lamenting America's industrial decline—a lesson absorbed by both parties. "Where is it written," Mr Biden asked on his visit to TSMC's chipmaking factory in Arizona, "that America can't lead the world once again in manufacturing?"

"In recent decades the focus became very narrow," Ms Yellen explains to *The Economist*. For the past year she has been touting an alternative vision, which she calls "modern supply-side economics". It emphasises the beneficial effects of public investment—in training, social services, clean energy and the manufacture of certain goods. This agenda cleverly weds the aim of succouring manufacturing to several other goals, including reducing America's emissions of greenhouse gases, limiting its dependence on imports of strategic goods and shoring up its technological lead over China.

A feast of chips and greens

United States, manufacturing investments announced*, 2021-22, $bn



*Over $1bn

†Clean energy, heavy industry and biomanufacturing

Source: White House

The president's national-security strategy, published in October, declared "outcompeting" China his administration's top priority. It identified semiconductors, the most advanced of which are made in Taiwan and so could become unobtainable if China invaded, and clean-energy equipment, an industry that China dominates, as critical vulnerabilities. "Our manufacturing capacity has really eroded very substantially," says Ms Yellen, "so that's not just about long-term growth in productivity, it's also about national security."

This view is not confined to Democrats. The CHIPS Act passed with Republican support. And even some Republicans who voted against it, such as Marco Rubio, a senator from Florida, support the logic behind it. "You can't be a great power if you're not an industrial power," he warned last year. "You have to be able to make things."

What is more, notes Brian Deese, the head of the National Economic Council, Mr Biden's would not be the first administration to make big investments in strategic industries or infrastructure. He points to the federal government's outlays in the middle of the 20th century on things like rural electrification, interstate highways and the space race. It invested roughly 6% of GDP a year in such things at the time.

Mr Biden's spending is not that generous. His subsidies for favoured industries amount to around 0.5% of GDP. But that is more than any other big economy bar China. The sum is also remarkable in that it is going mainly to private enterprises. And it involves a wide range of industries, from nuclear power to chipmaking. What is more, the support is not just for nascent technology but also for widely used goods such as semiconductors and solar panels.

The subsidies are already reshaping American industry, with supply-chains being reforged along the lines that America's politicians had hoped. On January 31st General Motors, a big carmaker, announced a $650m investment in a new lithium mine in Nevada. Eventually America could become a net exporter of goods whose domestic production is currently negligible: Credit Suisse reckons that American-made solar panels may meet 90% of domestic demand by 2030, a prospect that would have been unimaginable before the passage of the IRA.

The manufacturing push will also help to realise Mr Biden's green ambitions. The IRA cleverly turns cuts to America's emissions of greenhouse gases into a boon for industry, rather than a monumental burden, and thus makes them much more politically palatable. The federal government estimates that the act will help reduce America's emissions to 60% of their level in 2005 by 2030, about ten percentage points less than would otherwise have been the case. That would be a huge achievement, given Congress's previous refusal to vote for emissions cuts.

But if coating greenery with gravy solved a political problem, it creates many practical ones. In some instances, it will be hard to develop new suppliers as quickly as the IRA envisages. It will be difficult to build new solar factories, for instance, without using equipment from China, which has more or less cornered the market. "We want a lot of things that are inconsistent with the facts on the ground," says Willy Shih of Harvard Business School.

Much the same applies to the tax credits for electric cars. For buyers to receive the full $7,500 rebate, a rising share of the materials used to make the car's battery must have come either from America or a country with which it has a free-trade agreement. The trouble is, many of the minerals concerned are concentrated in countries with which America does not have a free-trade agreement, including Malaysia and Indonesia in the case of nickel, and Argentina in the case of lithium. New mines take years to develop (and hammering out new trade deals is even more arduous, in America at least), so manufacturers may have to forgo the full tax credit rather than comply with the IRA's strictures.

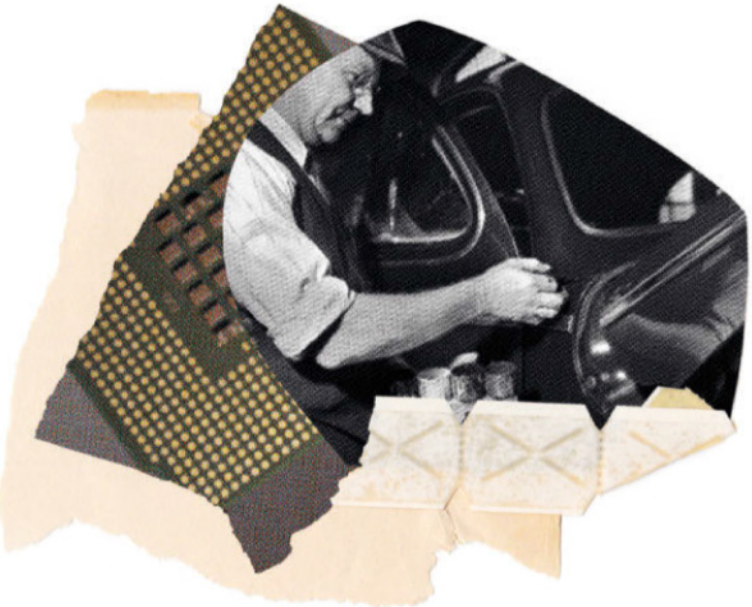
Loosening the rules would lower the cost of EVs and speed their adoption. The Treasury has signalled it may do just that, in detailed regulations to be published in March. But Joe Manchin, a senator who nearly torpedoed the IRA, is among those inveterately opposed to any lenience. In late January he introduced a bill intended to tie bureaucrats' hands. "The IRA is first and foremost an energy-security bill," he declared, "and the EV tax credits were designed to grow domestic manufacturing and reduce our reliance on foreign supply-chains." An embarrassing row is looming.

Other elements of the manufacturing push may suffer from the opposite problem: a glut. Many of the goods that America is seeking to manufacture are at risk of oversupply as it is, including both chips and solar panels. Chipmakers' margins are already falling, thanks to a recent fall in sales of personal computers: on January 27th Intel reported a staggering 32% drop in revenue in the final quarter of last year, compared with the same period the year before. It is hard to imagine that the opening of $20bn-worth of new semiconductor factories will not exacerbate its woes.

Shafts and screws

The proliferation of subsidies in America is also fomenting complaints from other manufacturing powers, which fear that their companies will be disadvantaged. South Korea is up in arms about electric-vehicle rules, which it says harm even those South Korean carmakers that are building new factories in America, since their suppliers do not yet meet the IRA's standards. Reports in November that Northvolt, a European battery-maker, might invest in America rather than Germany sent shivers through Europe.

Such rows may spiral into a trade war. On February 1st the European Commission announced a new plan to support green industry, to which it plans to redirect some €250bn ($272bn). The intention is to prevent America from sucking green capital across the Atlantic. China, the EU, India, Japan, South Korea and Taiwan all now offer generous subsidies to chipmakers. Mark Rutte, the prime minister of the Netherlands, has warned of a "race to the bottom on state aid".



These tit-for-tat handouts will make the impending glut in chips even worse. And they may set off a cycle of dependence, as struggling chipmakers ask for further assistance to stay in business, prolonging the period of oversupply and increasing the bill for taxpayers. Subsidies on offer to chipmakers around the world add up to 60% of their total annual turnover—a massive distortion. Yet Intel is asking for greater subsidies for a proposed semiconductor factory in Germany.

Mr Biden's supporters retort that lowering the cost of crucial goods is part of the goal of the manufacturing drive, not an unfortunate side effect. Indeed, they argue that the world will benefit from American subsidies, which will help usher nascent technologies along the learning curve and thus make them cheaper for everyone in the long run. "The Inflation Reduction Act is going to stimulate declines in the cost of clean energy that are going to have positive spillovers around the world," asserts Ms Yellen. But gratitude is in short supply among America's trading partners.

Another potential problem is tension among the many different goals of the new industrial policy. To maximise the benefit to workers, the Democrats attached requirements to some of the tax credits for companies to pay good wages and hire a certain number of apprentices. Other rules encourage the construction of new facilities in places with coal mines or oil and gas deposits, so that workers who lose jobs in dirty energy can slip seamlessly into cleaner employment. But all these stipulations raise the cost of building or manning new facilities, and thus diminish the attractiveness of investing on the margins.

In all sorts of ways, government help will bring government meddling. The commerce department told chipmakers last year that, in doling out subsidies, it would favour companies that invest in research and training, rather than returning profits to shareholders through buy-backs. But if the subsidies come with a risk of diminished shareholder returns, some companies may not seek them.

Perhaps the biggest question mark hangs over Mr Biden's central goal of resuscitating the middle class by creating lots of high-paying jobs in factories. In part, that is because resuscitation is not obviously needed. Nearly nine in ten men of prime working age (between 25 and 54) either have or are looking for jobs, a labour-force participation rate that puts America on a par with most of its peers in the rich world, from Norway to South Korea. The decline in the share of jobs and output tied to manufacturing is no greater than in other rich countries. Relative to GDP, America manufactures more than Britain or France, but less than Germany and Japan.

More to the point, even as manufacturing has weakened, other parts of the economy have strengthened. Software and research account for a much bigger share of output than they used to, for instance. These shifts have benefited not just the wealthy, but also the middle class. Since 2010 disposable income for the median American household is up by about 20%. Better yet, as the labour market has tightened in recent years, America's poorest workers have shared in the bounty. Since 2015 those in the lowest quarter by earnings have enjoyed the fastest wage growth, helping to chip away at inequality.

That is just as well, since the Biden administration's industrial push seems bound to disappoint in terms of job creation. In September, after the IRA and the CHIPS Act had become law, the Bureau of Labor Statistics (BLS), a government agency, published its forecasts for job growth between 2021 and 2031. It predicted the creation of 2.6m jobs in health care and social assistance, 1.9m in leisure and hospitality and 1.5m in professional and business services. Manufacturing, it said, was likely to shed about 140,000 jobs.

Counterweights and mufflers

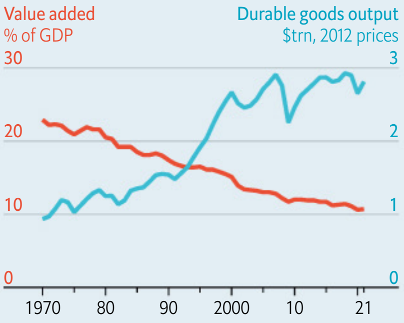
New jobs in, for instance, green hydrogen or electric-vehicle assembly may not constitute a net gain, but rather a replacement for work in oil refining or existing car factories. Moreover, the development of these new industries relies, to a great extent, on subsidies and regulation, which impose costs on the economy through higher taxes and prices. After accounting for such effects, the Penn Wharton Budget Model, an academic watchdog, concluded that the IRA would not bring about any change in GDP by 2030 compared with the status quo ante. The implication is that America's labour market may become greener, but not bigger.

Even if relatively few new jobs are created, they might still be better-paying ones. Since the mid-20th century, productivity in manufacturing has grown faster than in other parts of the economy, which has allowed factories to pay higher wages. But the increase in productivity is a double-edged sword: it reflects the fact that fewer people are doing more work, assisted by more robots. American carmakers and their suppliers ordered about 40% more robots in 2022 than they did in 2021.

1

Relatively weak

United States, manufacturing



Source: Bureau of Economic Analysis

That makes generating employment through investments in cutting-edge manufacturing wildly expensive. The $200bn of private investment in factories involved in making chips will create about 40,000 jobs (not counting any positive knock-on effects), according to the Semiconductor Industry Association. That works out at roughly $5m a job. Semiconductors are an extreme example because making them is especially capital-intensive. But the same trend is apparent in all manufacturing. The University of Massachusetts Amherst estimates the IRA will create 912,000 jobs each year over the next decade, at a cost of $98bn a year in public and private investment. That's more than $100,000 a worker.

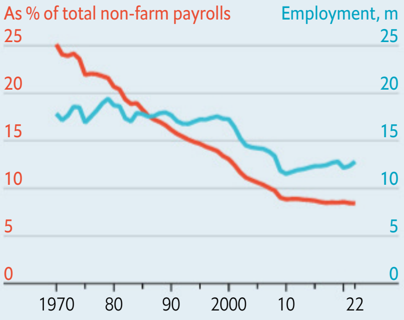
Indeed, many economists are just as inclined to blame the gradual loss of America's factory jobs on automation as on competition via trade. The long-running decline in employment in manufacturing, starting in 1980, long before free-trade agreements proliferated, supports this view. So does research such as that of Daron Acemoglu of MIT, who has found that places in America that install more robots tend to lose more manufacturing jobs.

There will still be lots of new jobs in up-and-coming industries. In the BLS's list of the 20 occupations likely to grow the fastest over the next decade, wind-turbine technicians rank second and solar-panel installers 18th. But both are expanding from small bases. That means that America will still produce 20 new nurses for every turbine technician or solar installer over the next decade, the BLS reckons.

2

Absolutely swooning

United States, manufacturing



Source: Bureau of Labour Statistics

What is more, many of these clean-energy jobs will not involve well-paid work in factories. They involve hard physical labour, often in remote locations, at the mercy of the elements, for meagre reward. Both turbine technicians and solar installers make about $50,000 a year, much less than the roughly $80,000 that nurses can expect, though the IRA's rules on wages may raise their pay.

Indeed, the real challenge for America's labour market may not be the creation of enough good jobs but rather ensuring that there are enough good workers for all the jobs that the government is labouring to create. Around 75% of women of prime working age are in the labour force, five percentage points below the average for the rest of the G7, a club of big, rich economies. In the rest of the G7 the share of women in work has increased over the past two decades; America is the only member to have suffered a decline. The absence of so many potential workers will only become more glaring as the population ages in the coming years. When Ms Yellen first began promoting "modern supply-side economics", she emphasised elements of Mr Biden's agenda intended to free more women to work, including hefty spending on child care and early education. But these policies were abandoned amid wrangling with Congress.

In fact, Mr Biden's manufacturing drive has involved an awkward political balancing act from the start. Not a single Republican voted for the IRA; even a few Democrats, such as Mr Manchin, proved difficult to win over. There was no groundswell of voters agitating for its adoption: polling suggests that most Americans have little idea what the law is all about.

Now that the money has started flowing, Republicans will be less inclined to oppose it. After all, much of the investment is going to Republican-governed states, such as Texas and Tennessee. The CHIPS Act, with its message of countering China, has always had bipartisan backing.

But different interest groups have had to be bought off with all manner of expensive policies: the labour movement with high wages and apprenticeships, industry with exorbitant subsidies, sooty places with new factories and so on. The cost of all of this will fall on taxpayers, consumers and shareholders. They, in effect, are paying for urgently needed emissions cuts that America's politicians were not previously willing to make. Mr Biden's complex political compromise is distressingly inefficient and definitely not the dawn of a new era of manufacturing-driven prosperity, but it will change America and the world nonetheless. ■

CSC:Miami

Content Supply Chains must be forensic in their detail.

Television broadcasters have long relied on instinct, market knowledge and spreadsheets to forecast TV viewership - but instinct needs to partner with information; market knowledge is never enough; and spreadsheets are no way to excel.

As witness to these challenges, Fractal undertook its own detective work.

By combining AI, data engineering and user-centric design, Fractal created an industry-first TV forecasting system for Europe's leading media and entertainment company. The result? Up to 30% improvement in forecast accuracy.

Fractal: perfectly targeted and timed TV, no drama.

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Management

David Brent Ltd

Britain could improve its productivity by taking management more seriously

BRITAIN'S GROWTH CRISIS

IMAGINE THE typical plot of a British period drama. The setting is a stately home. His Lordship is amply endowed with English virtues: reserve, fair play and a sizeable chunk of Northumberland. But he lacks commercial nous and his education (Homer, Virgil, Catullus for fun) does not help. Chronic mismanagement has driven the family estate to the brink of insolvency. The hunt is on for a dashing—and, more importantly, rich—American to marry the heir and shore up the balance-sheet.

The British establishment has been fretting about its administrative abilities for decades. In 1920 a desire to turn out better public servants was one of the things that prompted Oxford dons to design a new degree course called "Modern Greats"; its updated form, the philosophy, politics and economics degree, continues to educate future leaders. In the 1960s, as the country was gripped by worries about post-war industrial decline, universities built management institutes and business schools, mimicking American ones that had been around since the turn of the century.

Yet management—the business of running organisations productively, efficiently and reliably—remains a topic that often prompts a smirk or an eye-roll. Unlike in America or Germany, says Ann Francke, boss of the Chartered Management Institute (CMI), "manager" is not a title to aspire to in Britain. Depictions in popular culture tend towards toe-curling awkwardness or slapstick incompetence: think of sitcom characters such as David Brent in "The Office" or Basil Fawlty in "Fawlty Towers".

The same blind spot afflicts political debate. Politicians are swift to praise frontline workers in the National Health Service (NHS). The managers and consultants who administer the NHS seldom get a look in, unless it is to be accused of draining its budget. Policymakers know that Britain has a growth problem, one underlined by new forecasts from the International Monetary Fund this week predicting that it will be the only G7 economy to contract this year. Yet upping the quality of management barely gets a mention. It should. If British firms were better run, the impact on productivity could be striking.

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Performance reviewed

Management is a slippery topic that is not much studied by economists. Assessing it involves speaking to businesses—and as one dismal scientist says, economists tend to avoid speaking to companies in much the same way that biologists tend to avoid speaking to chimps. But two of their number, John Van Reenen and Nicholas Bloom, have been attempting to correct that. Since 2003 they have been developing and running the World Management Survey (WMS), an attempt to put the study of management practices onto a rigorous footing.

To date, the WMS has carried out over 20,000 interviews with medium-sized firms, hospitals and schools in 35 coun- ▸▸

tries, some rich economies and others emerging markets. Researchers ask firms open questions about how they are run, from documenting process improvements and setting targets to performance reviews and promotion criteria. They then grade them in a range of categories.

The firms do not know that their responses are being graded. The interviewers do not know anything about the firms' financial performance or productivity. Each interviewer's results are then adjusted in an effort to remove their own biases (such as consistently grading firms more harshly or leniently than the survey average).

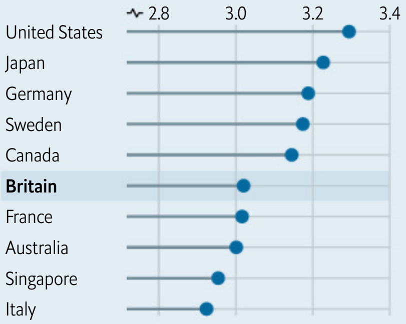
The results allow for a ranking of countries based on differences in their firms' management practices. Such differences are not just large; they also persist across borders. Among the WMS's findings is the fact that companies' offices abroad tend to be managed as well as those in their home country, meaning that the London branch of an American business, say, will typically be managed to the same standard as its offices in New York or Chicago. (Multinationals achieve higher management scores than domestic firms wherever they locate.)

In the grand scheme of things, Britain's managers do not do terribly. If you aggregate the results of the surveys that have been conducted since 2004, the country comes sixth, outperforming the likes of France, Australia and Singapore.

But it could still do an awful lot better (see chart). Britain sits below an elite group that is headed by America and also includes Japan, Germany, Sweden and Canada. This shortfall matters. Well-managed firms tend to score highly on a host of other metrics as well. They are likely to be more productive and profitable, to export more and to see their output grow more quickly. They also provide their employees with a better work-life balance.

If the factors associated with good management seem intuitive, just how much it matters is still startling. The correlation between a high management score and productivity is so strong that management seems to account for more of the difference between the most and least productive firms within countries than factors like research and development spending or use of IT. Mr Van Reenen and Mr Bloom reckon that more than half of the productivity gap between Britain and America can be attributed to poor management.

That is a bold claim. Rather than better management driving productivity gains, it could be that productive firms are able to attract better managers with higher salaries, for instance, or to pay pricey consultants to help them. And however strong the effect of good management, it can easily be swamped by other influences. Japanese firms may be well managed, for example, but few would hold Japan up as an obvious exemplar of high productivity.



Boss classed

Average company-management score, 2004-22

Selected countries, score of 1 to 5, 5=best

Source: World Management Survey, Programme on Innovation and Diffusion

Even so, Britain should take its management deficit more seriously. Having better-run companies and public-sector organisations might not be sufficient to solve the country's productivity problem, but it is probably necessary. And happily, the measures that would encourage this improvement are likely to bring other benefits.

Take the role of family firms. They form the backbone of many economies, including more productive ones like Germany. But one of the best predictors that a firm will be very poorly managed is that it is family-owned and has a chief executive whose position is due to inheritance, and specifically to being the eldest male child. Family firms that separate ownership and management, and even those who select their chief executive from a pool of all family members rather than via primogeniture, do not suffer from this deficiency. Mr Van Reenen talks about the "Carnegie effect", whereby children who inherit wealth—or, in this case, power—are less likely to work hard.

British family firms are much more likely to be passed down via primogeniture than American or German ones. An early WMS study found that two-thirds of British family firms chose their CEO in this way, compared with a third of American family firms and a tenth of German ones.

WORLD'S
BEST
BOSS

One reason for this may be the tax code. British businesses that are passed down the generations are liable for inheritance-tax relief of up to 100%. No such exemption exists in America, and the one in Germany is 50%. Mr Bloom points out that such firms also tend to have low debt levels, meaning that they can be run unproductively for a long time without getting into financial difficulty. Reducing the tax incentive to keep businesses in the family, or making it contingent on a meritocratic selection process for the chief executive, could nudge the management of many British firms into better hands.

One of the best predictors of good management, meanwhile, is that a firm is exposed to strong competition in its product market. It was a lack of this competition, argues Geoffrey Owen, a historian, in his book "From Empire to Europe", that led to the poor management of businesses during Britain's post-war industrial decline.

By reducing the amount of competition British firms face, therefore, Brexit-induced restrictions risk impeding improvements to how well they are run. The better news is that Britain has maintained a fairly relaxed attitude to foreign ownership in recent years. Politicians would be wise to continue that stance, by using powers to block acquisitions—such as those granted by the National Security and Investment Act passed in 2021—sparingly.

Another boost could come from more investment in management training. The CMI's Ms Francke notes ruefully that Britain's apprenticeship levy, a tax designed to encourage firms to invest more in training, often comes under fire for how much money is allocated to mid-career management training rather than to apprenticeships for teenagers entering the workforce.

Yet the CMI calculates that a private-sector employee completing a management apprenticeship is rewarded with an average pay increase of 17%, implying that this training is of high value to employers. A study in 2019 by Britain's Industrial Strategy Council, an advisory group, suggests why. It concluded that, based on current trends, by 2030 the second-biggest skills shortage faced by firms will be in management, behind only digital technology.

As well as laughing at their managers, then, Britons should also acknowledge their importance. Characters who incrementally reduce a factory's waste, raise employee retention and chivvy their teams to achieve greater productivity would make for less entertaining TV than David Brent. But to get out of its growth rut, Britain needs more of them. ■

Global Britain

Worse service

The BBC World Service cuts back

ON THE HOUR for 85 years the chimes of Big Ben have sounded across the Arab world, a rare certainty in a region rife with war, revolution and repression. And then the sonorous tones of the presenter, saying "*Huna London*" ("This is London") at the start of each news bulletin.

No more. On January 27th the British Broadcasting Corproation silenced its oldest foreign-language radio service, BBC Arabic. Many of the World Service's 40-odd language broadcasts face the same fate. Staff say they have been told that by March the BBC will have stopped television transmission in Somali, Hausa and French for Africa, as well as radio output in Chinese and in the languages of Central Asia and the Indian subcontinent (not including Afghanistan). About a sixth of the World Service's 2,500 jobs are to go.

The bottom line is to blame. In 2014 the Foreign Office stopped core funding for the World Service, leaving the BBC to foot over 75% of a roughly £400m ($493m) annual bill. The freezing until 2024 of the licence fee, the corporation's main source of funds, has made the strain intolerable. "How far is it appropriate for audiences in Leicester, for example, to continue picking up the tab for services in, for example, Lagos?" asked Richard Sharp, the BBC's chair, speaking at a recent event for the Whitehall & Industry Group, a charity, above an alley called Little Britain. Without government funding, he warned, "the future of the World Service is in jeopardy".

Previous rounds of cuts have already depleted morale. Training has been pared back. There are fewer big interviews and scoops, more grammatical errors. Voluntary redundancies have hastened the departure of experienced staff. "You're wiping out the collective memory of your organisation," says Pierre Vicary, who heads the National Union of Journalists.

Mic drop

The BBC will continue to make foreign-language content, but more of it will be produced offshore and more of it will be distributed online, where consumption is growing fastest. The BBC says that hiring in regional bureaus saves money and brings content closer to its audience. It will also bring journalists closer to repressive governments. Staff in Cairo, Egypt's capital, for instance, are subject to surveillance and have been hauled in for questioning. The BBC has told union leaders they cannot represent staff hired abroad.

Online content, though in growing demand, will also leave audiences stranded in countries where governments shut their people behind firewalls. Staff at the Persian service are aghast that the BBC is taking Persian radio off air next month, and is going online just as the Iranian authorities have cut the internet to silence nationwide protests. Audiences in countries with low and slow internet coverage will also suffer.

The World Service insists it retains the loyalty of its audience. Some 60% of Nigerians consume BBC news every month, it says, compared with 9% who consume content from China's state-run CGTN and 2% for Russia's RT. But as the BBC withdraws, autocrats may seize ground that has been vacated. Iran International, a Saudi-funded broadcaster in London, has tempted many BBC Persian staff away by dangling higher salaries.

Over time, warns Mr Sharp (whose own dealings with the politicians who appointed him are under scrutiny), trusted independent journalism could fall victim to the disinformation age. "The Russians and Chinese are together investing billions of dollars in their state-backed services, massively expanding their operations across Africa, South America and the Middle East," he says. The BBC has in effect handed the problem of how to respond back to the British government. ■

Economics

Boxed in

The BBC's coverage of economics is not biased but it is not impartial either

"DEBT COSTS help push government borrowing to 30-year high," the website of the British Broadcasting Corporation (BBC) told users on January 24th. That headline exemplifies what an independent report by Michael Blastland, a former BBC radio producer, and Sir Andrew Dilnot, an economist, labels a breach of the Beeb's commitment to impartiality, not through deliberate bias but "uninformed groupthink and lack of confidence to challenge arguments".

In December Britain did indeed borrow £27.4bn ($33.7bn), the most for that month since records began in 1993. But the framing invites readers to make certain judgments. Why report the figure in pounds? Inflation over the intervening three decades means a pound is worth much less than it was in 1993; it might be more surprising if the record was not broken every December. There is also that journalistic urge to find a record to break. Yet 1993 holds no particular magic: it is just when the data series starts.

Such choices are part of what the report says is a reflex assumption in the BBC's coverage that debt is always and everywhere bad, rather than a tool that states can use well or badly. Whether this perspective harms the Labour Party, which has historically favoured higher spending, or the Tories, on whose watch debt has steadily risen, is uncertain. It definitely flattens debate.

The underlying problem, reckon the report's authors, is that the BBC takes too much of a lead from Westminster. It uses the judgments of political reporters to decide which economic stories are important and then frames them as a two-sided contest between the left and the right. That lets the politicians determine what counts as a reasonable opinion. Both the government's and the opposition's embrace of austerity in 2010 meant that Keynesian economics, which might have advocated fiscal stimulus, did not get a fair shake. In that case, the consensus between the main political parties led to the false impression of consensus among economists.

Many economists had similar beefs about the BBC's coverage of Brexit, accusing it of trying to balance the overwhelming consensus in the profession against a few fringe figures who suggested that leaving the EU would help boost growth. In that case, political rifts obscured agreement among economists. That may not be systematic bias but it nonetheless matters—76% of Britons get their news from the BBC, far more than will ever read an economics paper.

Nostalgia

Once more unto the breeches

BANQUETING HOUSE, WHITEHALL

Britons remember a murdered king by dressing in doublets

On a chilly Sunday in the capital, the King's Army is mustering. A Cavalier in high-topped boots rummages in the boot of his car; another soldier checks his iPhone; a young musketeer in red eats a McMuffin ("sausage and egg", he confirms, and "not really" period correct).

The King's Army ("re-enacting seventeenth-century history since 1974") is a wing of the English Civil War Society. They are gathering on the Mall, in the middle of London, to mark the execution of Charles I, which took place in Whitehall on January 30th 1649. Although, as a retired businessman in breeches and ostrich-feather hat explains, they tend to avoid that word "executed". His Majesty, he says meaningfully, was "murdered."

The death of Charles I has had many profound historical consequences. It marked the only time that an English king had been tried and killed by his own people; it made the constitution buckle and reform. And it has meant that, for the past 50 years, people with a fondness for breeches and bonnets have turned up in central London to commemorate his "horrid murder" and to use the word "Hail", fearlessly and frequently, in public.

The crowd is a good one. People in armour clank past carrying port; a bandolier hangs on a car door; a musket lies beneath an M&S bag; and a female vicar in "authentic" costume (though "obviously because I'm a woman I'm not authentic") is present to give an address. A little after 11am, the army and its anachronisms are ready. A captain with rapier, sash and lace bib addresses his troops. "Everyone!" he shouts, "Turn your phones off!" With muffled drum, the procession begins.

Dressing up for a murdered king is an odd habit but not, in England, an entirely unusual one. The day after the march, in a central London church, the Society of King Charles the Martyr meets to commemorate "Saint Charles" with prayers and plenty of Anglican pomp. There are bells and smells and relics; stuff is recited in Latin. The priests wear fancy old-fashioned hats, and the congregation is filled with the kind of people who look like they might enjoy a good claret. This is historical re-enactment with a halo.

There are two ways of seeing these ceremonies. Some people are there to solemnly reverence an English king who they think was cruelly killed. But many more seem to be reverencing doublets, dressing up and something which has enjoyed a more powerful and long-lasting reign over the English people—a romanticising nostalgia for the past. This, after all, is a nation that put up "Keep Calm and Carry On" posters during the covid-19 pandemic, and that voted for a Brexit which had been burnished with the sepia tint of the second world war.

Nostalgia can come with a cost, however, as historical re-enactors well know. Those gathering on the Mall used to be part of a single, large group with other civil-war re-enactors. But as a pikeman captain in a helmet with steel ear flaps explains, some years ago there was an acrimonious schism within this community. The other lot, he recounts, were rumoured to allow such ahistorical things as "too many people wearing lace". And, he adds darkly, they held "Wellington-boot throwing competitions". And so they split into separate camps. The politics of nostalgia have, it turns out, always been tricky. ■

Dress parade

Prisons and gender

Cell divisions

Scotland is in a mess over trans prisoners. What's the right answer?

The belief that gender identity is as important as biological sex was always going to cause problems. With children, it has led to the harmful prescription of puberty-blocking drugs. In sport, the inclusion of males on female teams has diminished women's achievements. Yet the harms may be particularly egregious in the criminal-justice system.

In January a male rapist was placed in a women's prison in Scotland. Isla Bryson, who changed his name from Adam Graham after being arrested (thus forcing lawyers to refer to "her penis"), may have transitioned in the hope of a softer sentence, or to access potential victims, or both. But Scotland's embrace of self-ID made it possible: since 2014 the Scottish Prison Service (SPS) has allowed prisoners to be housed with members of the sex with which they identify (regardless of whether they have taken hormones or undergone surgery).

Isla Bryson has now been moved to a men's prison. On January 29th the Scottish government said it would not place any "newly convicted transgender person with any history of violence against women…in a female prison", pending a review. It has not said it would stop putting any males in women's jails. Scottish Trans, a group which helped the SPS draw up its policy, said a blanket ban would be wrong. Nicola Sturgeon, the first minister, agreed, saying it was important not to "even inadvertently suggest that trans women somehow pose an inherent threat to women".

Campaigners for women's rights (and

▸▸

others) point out that though most trans women pose no threat to women, there is no evidence that they pose less of a threat than other men. Most have not undergone sex-reassignment surgery. Many are heterosexual. Given that less than 2% of reported rapes lead to a conviction, claims that the prison service can weed out predatory males bear little scrutiny.

Putting males in female spaces also compromises women's privacy. This is particularly important in prison. Women constitute less than 4% of the prison population, and tend to be locked up for low-level, non-violent crimes. A majority of them have been victims of domestic violence. One former female convict has described how she was "shaking with fear" when she was forced to share a shower block with trans women in a Scottish jail.

England and Wales also allow some trans women to be housed with female prisoners. But the Ministry of Justice has made this more difficult. In January it said no prisoner with male genitals would be housed with women. Some women's rights campaigners hope this will include those who hold a gender-recognition certificate (GRC), which means they are currently classed as female (regardless of their genital arrangements). Calls are growing for equality legislation to be amended to clarify that the protected characteristic of "sex", which allows some spaces and services to exclude men, means biological sex.

Where then should trans prisoners be placed? The question mostly relates to trans women, since most trans inmates are natal males (and few trans men ask to be transferred into men's prisons). Some trans women are themselves too vulnerable to be housed with males.

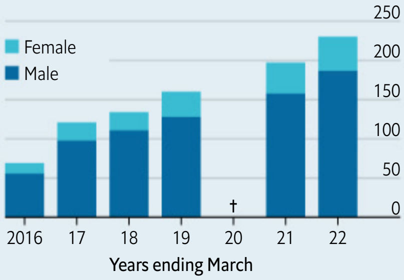
Part of the answer is vulnerable-prisoner units, which are used for those considered at particular risk (including some gay men and police informants). Because of the rise in the number of trans prisoners (see chart), some reckon a separate unit for transgender prisoners should be established. Jo Phoenix, a professor of criminology at Reading University, says this would help the criminal-justice system develop better ways of working with trans prisoners, including in such areas as rehabilitation. This is a group, she says, about which too little is known.

Scotland is unlikely to consider such policies any time soon. Ms Sturgeon, who seems to have succumbed to the influence of extreme trans activists, has struggled to explain how trans women are women except when they're violent predators. Her position has been made more difficult by her championing of Scotland's gender-recognition bill, which would have made it much easier for someone there to get a GRC than someone in England and Wales. When Westminster blocked the bill, Ms Sturgeon called it a "full-frontal attack" on the Scottish Parliament. But it was her party that stopped changes making it harder for male sex offenders to get a GRC. ■

On the agenda

England and Wales, transgender prisoners*

By natal sex



*Excludes people with a gender-recognition certificate †No data

Source: HM Prisons

Sewage

Wipe out

Britain's newest islets are made of wet wipes

THE BRITISH ISLES is acquiring some new additions. These nascent islets are not made of granite or limestone, but of agglomerations of wet wipes and mud. The largest is a metre deep, spans the width of two tennis courts and sits at a bend in the Thames by Hammersmith Bridge in London. It was measured last summer by volunteers from Thames21, a charity, which has been tracing the formation of such monstrosities for seven years. It reckons that there are at least nine wet-wipe islets in the Thames, and that smaller ones may be forming in the bends of other rivers.

Britons dispose of 11bn wet wipes a year. They clean the nation's babies and homes, but they also block sewers when they are flushed: a report in 2017 by Water UK, an industry body, found that wipes made up 93% of the material obstructing sewers. Even those claiming to be "biodegradable" may not decompose fast enough to avoid clogging waterways. Some 90% of them contain microplastics, which leach into water and digestive systems (Britons ingest enough plastic each week to make a credit card, reckons the World Wildlife Fund, a charity).

A few retailers, such as Tesco and Boots, have put a stop to the sale of all wipes that contain plastic. Alternatives are emerging. Wype, a natural gel that is applied to toilet paper, is the invention of Giorgia Granata, an Italian expat mourning Britain's lack of bidets. FlushAway is a dissolvable wipe.

But wet wipes are hard to get rid of. They are not included in the government's list of single-use plastics that are due to be banned from October. Although wipes are plastered with words like "flushable" and "biodegradable", the use of these terms is largely unregulated. The study by Water UK found that "flushable" wipes were still 88 times more likely than toilet paper to block sewers. The technical standard "fine to flush", which was introduced by Water UK in 2019, tests wipes under lab conditions that do not reflect the state of Britain's sewers.

According to the Water Industry Act of 1991, it is illegal to flush anything that is "likely to injure the sewer or drain" or "interfere with the free flow of its contents". But Britons don't seem able to stop. In a survey carried out in 2022 by Thames Water, a utility, just over one in five people admitted to flushing the things away. The emergence of wet-wipe archipelagoes suggests that others may have been economical with the truth.

Bagehot | From Mr Butskell to Ms Heeves

How Labour and the Conservatives ended up agreeing on almost everything

In 1954 *The Economist* introduced readers to Mr Butskell. This portmanteau of the Conservative chancellor, Rab Butler, and his Labour predecessor, Hugh Gaitskell, was a personification of the post-war economic consensus that shaped Britain from the 1940s to the 1970s. Each party accepted the broad parameters of a generous welfare state, Keynesianism and full employment, until Margaret Thatcher emerged.

Butskellism may be long dead, but another consensus is forming in British politics. On Brexit, the defining schism of British politics for the past seven years, each of the two main parties is committed to honing the edges of the arrangement, rather than forging one anew. From immigration to foreign policy to the future of the union, there is little to choose between the parties. When it comes to the size of the state and the shape of the economy, neither Jeremy Hunt, the Tory chancellor, nor Rachel Reeves, the Labour shadow chancellor, veer too far from each other's visions. Mr Butskell has been succeeded by a new figure: Ms Heeves.

Mr Hunt and Ms Reeves would be equally offended by the characterisation—yet more agreement!—but this is not a cosy consensus. Political parties are drawn together by shared nightmares rather than common goals, argues Phil Tinline in the "Death of Consensus", a recent political history of 20th-century Britain. Consensus is agreement "on what to reject". For those who lived through the 1930s, like Mr Butskell, the thing to fear was the dole queue. A policy of full employment followed. By the 1970s the nightmare took the form of trade-union militancy. And so along came Thatcher, whose legacy has survived subsequent Labour and Conservative governments.

Different nightmares dominate the mind of Ms Heeves. The first is a paranoia about financial stability. Liz Truss, the shortest-lived prime minister ever, provided a terrifying example of how bad things can get, and how quickly. After her budget was unveiled last autumn, sterling plunged, gilt yields spiked and pension funds were almost impaled. Ms Truss lost her job; her growth-at-all-costs philosophy will not soon be repeated. Now fiscal orthodoxy rules supreme. Boosting growth or stopping climate change come a distant second to fiscal prudence in Ms Heeves's world.

Both parties have been burnt by experimentation. Ms Truss's experiment did not end well. Nor did that of Jeremy Corbyn, the former Labour leader, who promised a radically different economy and took the party to its worst result in almost a century. In the next election the Tories will campaign on the idea that any embryonic recovery is not worth risking. Labour will argue that only they can provide competence. Sweeping change will not be on offer. Ms Heeves channels the slogan of Konrad Adenauer, a post-war German chancellor: "*Keine Experimente!*"

Above all, Ms Heeves fears a re-emergence of the miserable political paralysis that jammed Westminster between 2016 and 2019, after Brexit triggered a political nervous breakdown. Neither party wants to examine Britain's relationship with the EU: the Conservatives because they botched it, and Labour because keeping schtum has given them a 20-point lead in polls. Instead Ms Heeves treats Brexit as a fact of life, like bad weather, rather than an active choice. Things can be easily ignored, if all sides want to ignore it.

Heevesianism runs beyond the economy and Brexit. On Scotland, the parties move in lockstep. Chances of a second referendum on independence are close to nil, regardless of who is in power. A radical overhaul of Britain's growth-choking planning laws—the closest thing the country has to a £50 note on the pavement—is unlikely. If the Conservative government were to collapse, Britain's foreign policy would not budge. Labour's peacenik era under Mr Corbyn is over; the Conservatives' pacifist phase never began.

Consensus does not mean copying. When Mr Butskell ruled, British policymaking was still erratic. The steel industry was nationalised by Labour in 1951, privatised by the Conservatives in 1953 and then renationalised by Labour in 1967. Likewise, should Britain's finances perk up in the coming years, Mr Hunt will rush to cut taxes a little. A penny or two off income tax may tempt some voters. In the same circumstances, Ms Reeves would probably aim any windfall at Britain's ailing public sector. Ms Heeves, like her predecessor, has a split personality at times.

The parameters of political debate, however, are firmly set. What look like differences in policy are often mere differences in tone. Butler said both he and Gaitskell "spoke the language of Keynesianism. But we spoke it with different accents and with a different emphasis." British politics now takes place in the interstices of a hulking consensus, with politicians reduced to squabbling over a few billion pounds-worth of annual state spending—mere crumbs off a £1trn ($1.2trn) cake.

The inimitable Heeves

No consensus can last for ever, but once it sets in it is difficult to shift. It took free-market Conservatives like Thatcher a few decades to see off Mr Butskell. The growing band of Britons keen on returning to the EU may face a similar wait, just as those who demanded Britain's departure spent four decades in the wilderness. Memories of the Brexit nightmare will have to fade. Anyone who wishes to increase the size of the state, à la Corbyn, or who dreams of throwing off the chains of fiscal orthodoxy, like Ms Truss, must hold tight until political amnesia sets in.

After years of political upheaval, betting on political stability may seem foolish. But things can settle down swiftly. J.H. Plumb, a British historian, mulled how English politics shifted from revolution and war during the 17th century to embryonic democracy by the start of the 18th century. It was not a slow evolution but a rapid shift. "Political stability, when it comes, often happens to a society quite quickly," he concluded, "as suddenly as water becomes ice." The rise of Ms Heeves was rapid. But her reign will be long. ■

Ukraine

All steady on the eastern front

KUPIANSK

Russia is pounding away harder than ever in Donbas. But Ukraine's soldiers seem curiously unfazed

Colonel "Maestro" is a commander in the Kupiansk sector in eastern Ukraine. He has been fighting the Russians since they first invaded, in 2014. His car has a dish for Elon Musk's Starlink satellite-internet service, now ubiquitous along the front lines, attached to its roof. Thanks to his drone intelligence teams, he can watch what the enemy is doing on the other side of the line in real time, "24/7". One night this week he monitored 30 Russian men being sent forward. Two of them were killed. When that happened the rest marched on regardless and did not bolt for cover. In the end nine of them died. "They either had no regard for their own lives," he says, "or they were on drugs."

On January 30th Jens Stoltenberg, NATO's secretary-general, said "we see that they [the Russians] are preparing for more war, that they are mobilising more soldiers, more than 200,000, and potentially even more than that." Mr Stoltenberg is not the only one to warn that a new offensive is in the offing. Ukrainian leaders, including President Volodymyr Zelensky, have said the same, and Russian artillery strikes have sharply stepped up in recent days. But most Ukrainian soldiers at the eastern front seem curiously unfazed. Colonel Maestro's point is that the reinforcements will not be highly trained professionals. Far from it. Many are convicts who have joined the mercenary Wagner Group deployed in the fighting around the city of Bakhmut, because to do so is a way to get out of jail. Their motivation is low, unlike that of the men they are fighting.

If yet more Russian recruits are to be thrown at them, says Oleksandr, a sniper serving under the colonel, that means that the smell of the decomposing bodies abandoned by their comrades will be "unbearable". Meanwhile, Brigadier-General Sergiy Melnyk, who oversees a large part of the Kharkiv region, including its border with Russia, says drones and satellite imagery have not indicated any new build-up of troops there. In fact, he says, the Russians are digging trenches and building defensive positions as if it is they who are expecting an attack.

Ukrainian commanders say that they believe the main Russian aim in trying to take Bakhmut is to present a success to the public at home, particularly for the Wagner Group. "It is in a valley," says General Melnyk, so it will be hard, though not impossible, for the Russians to advance from there and to threaten the much bigger cities of Kramatorsk and Sloviansk, which would then become vulnerable to artillery. It is also possible that Ukrainian-held areas in the region could be encircled. From the Ukrainian perspective, General Melnyk says that the point of continuing to fight to retain the city, even at a high cost, is also symbolic. But beyond that, it plays an important role in tying down a large number of Russian troops. General Melnyk thinks that even if it is lost it could be recaptured later. But not all commanders think defending Bakhmut is worth it in terms of the heavy casualties. "If it was up to me I would ▸▸

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pull out," says another of them.

The general hastens to add that there is no room for complacency. He is preparing in case the Russians do launch a fresh push, he says, just as his own forces are getting ready for their own counter-offensive to drive the Russians out of the Ukrainian territory they occupy. It is almost a year since the Russians began their full-scale invasion of the country, but the general says that since Ukrainian forces pushed the Russians out of almost all of the Kharkiv region in September, and Ukrainian forces recaptured Kherson in November, psychologically everything has changed for his men. "We lost our fear of them. We understood that we can fight back and beat them."

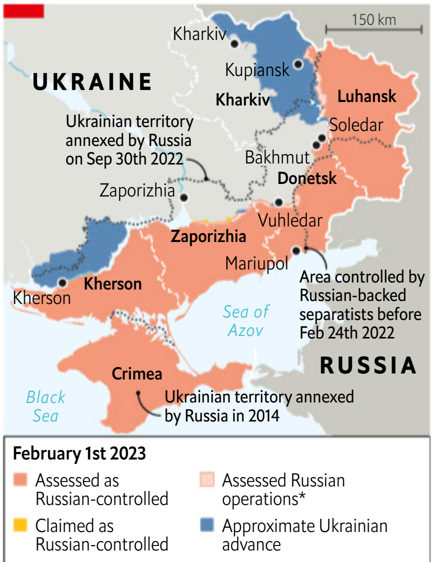
The roads leading to the eastern front are full of military traffic. Driving through the ruins of small towns, and past the incinerated remains of tanks and armoured cars, there is a stream of lorries transporting ammunition, cars packed with soldiers and transporters moving armoured vehicles. So much different equipment has arrived in the past few months that soldiers have a problem identifying what is what. As a large Turkish Kipir armoured car drives past, a couple of soldiers reach for their phones to identify it.

Morale remains high, and Ukraine's soldiers are learning from experience. Sergeant Vasyl Dubovyi's team have parked and concealed their car in a small wood giving onto frozen fields within earshot of the Bakhmut front. Before the invasion he was a business analyst. In the distance there is the sound of rocket and artillery fire. Until yesterday a German-made howitzer supplied by the Dutch stood here. Left behind are stacked casings from American-made shells. The team's car has an Irish numberplate. It was bought for them by a Ukrainian volunteer group.

Sergeant Dubovyi takes out a gadget. While his colleagues are assembling their drone, he uses his device to scan the airwaves to determine whether there is a Russian drone in the area, or electronic interference that could end in their drone being downed. Two laptops sit on the open tailgate of the car, next to flasks of coffee and pastries. Once the drone is airborne it begins transmitting video to the computers. The gear has become invaluable, says Colonel Maestro, and the software is infinitely superior to anything the Russians have. The nine soldiers his men killed a few hours earlier were spotted by one type of drone and picked off by another, which was directed from his command centre.

The Ukrainians' drone equipment is a combination of local and Western kit. Everyone here agrees that Ukrainian forces have only been able to hold their own due to their determination and Western arms. There may still be setbacks, such as the loss of the little town of Soledar last month, for which the Russians paid a high price in terms of soldiers killed. But for now Ukrainian commanders do not think the Russians have the capacity to launch a successful all-out offensive.

Yet the Ukrainians say that although they have the weapons and the manpower to hold the Russians at bay, they don't have enough of the former to launch their own full-scale counter-offensive. That will depend on the alignment of three factors. The weather, troops being ready (including those now abroad learning how to use new Western kit) and finally the delivery of tanks and other equipment promised by Western allies. "But", asks Sergeant Dubovyi, "when will it arrive?" ■


150 km
Kharkiv
UKRAINE
Kupiansk
Kharkiv
Luhansk
Ukrainian territory annexed by Russia on Sep 30th 2022
Soledar
Bakhmut
Donetsk
Zaporizhia
Vuhledar
Zaporizhia
Mariupol
Kherson
Kherson
Area controlled by Russian-backed separatists before Feb 24th 2022
Sea of Azov
RUSSIA
Crimea
Black Sea
Ukrainian territory annexed by Russia in 2014
February 1st 2023
Assessed as Russian-controlled
Assessed Russian operations*
Claimed as Russian-controlled
Approximate Ukrainian advance

*Russia operated in or attacked, but does not control
Sources: Institute for the Study of War; AEI's Critical Threats Project

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Georgia

The broken toy

TBILISI

Once a beacon of liberty, Georgia has drifted into the Kremlin's orbit

THE ROAD from Tbilisi airport to the old town—a web of steep cobbled streets with ornate balconies and the mouthwatering smell of *khinhali* dumplings and *khachapuri* cheese bread—bears the name of George W. Bush, the first American president to visit the small Caucasian country, in 2005. Saluting its democratic reforms, Mr Bush called Georgia "a beacon of liberty" and told its young and restless reformist president, Mikheil Saakashvili, that Georgia had "a solid friend in America".

These days it is the Kremlin that is praising Georgia, a country it invaded in 2008, for toeing its line and refusing to join Western sanctions against Russia. The 55-year-old Mr Saakashvili is under guard in hospital on the outskirts of Tbilisi, fighting dementia and muscle atrophy. "My health is in deep shit," Mr Saakashvili wrote to your correspondent in a letter. "Besides all kinds of bad symptoms, what makes me desperate is a terrible memory loss." Mr Saakashvili believes that he has been poisoned, and says he lapsed into a brief coma after an earlier move to a different prison hospital. In December his legal team distributed a toxicology report said to identify the presence of heavy metals in his body, in which the toxicologist expressed the opinion he had been poisoned.

Mr Saakashvili modernised Georgia but also became enmeshed in scandal and repression. After standing down once he had been termed out as president, he fled in 2013 fearing arrest at the hands of Bidzina Ivanishvili, a reclusive businessman who made his money in Russia, served briefly as prime minister, and has in effect ruled Georgia ever since, though he holds no formal government post. Mr Saakashvili, subsequently stripped of his Georgian citizenship, moved to Ukraine and took a Ukrainian passport, but in October 2021 he returned to Georgia hoping to rally protests in his favour. Instead he was arrested, hav-

▶▶

From reformer to prisoner

ing been sentenced in absentia for abusing his powers as president, and is serving a six-year sentence.

The European Parliament and Volodymyr Zelensky, Ukraine's president, have asked Georgia to release Mr Saakashvili, who once served as the governor of Odessa and still chairs the National Reform Council in Ukraine, a consultative body, for medical treatment outside Georgia. His incarceration and mistreatment appear to be political revenge, according to Amnesty International, and a favour to Vladimir Putin, who conducted a short war against Georgia in 2008 and once promised to hang Mr Saakashvili "by his balls".

Georgian Dream, the party Mr Ivanishvili founded, has held on to power by stoking fears of turmoil and of Mr Saakashvili's return to power. But while Georgians may be disenchanted with their former president's politics, they are also repelled by the inhumanity of his treatment. "People are more supportive of Saakashvili as a prisoner than they are of Saakashvili as a politician," says Iago Kachkachishvili, a Georgian sociologist.

Mr Saakashvili's mistreatment is impeding Georgia's chances of integrating into Europe. Other breaches of the rule of law include the imprisonment last year of Nika Gvaramia, who runs a leading private TV channel critical of the government, on patently trumped-up charges. Opposition politicians are under surveillance. Georgia's bid to be granted candidate status by the EU was sent back last June with a list of 12 demands, which the government seems in no hurry to address.

"Georgia used to be a favourite toy of America and the West. Now the toy is broken and nobody pays much attention to it," says Shota Utiashvili, a former government official, now a fellow at the Georgian Foundation for Strategic and International Studies, a think-tank in Tbilisi. Georgian Dream now rules in coalition with several of its former members who have set up a more radical and overtly anti-Western movement in parliament, called Power of the People. Its rhetoric and policies, including a proposed bill to bar "foreign agents", look like a carbon copy of Kremlin tactics. The movement has even blamed America for attempts to overthrow Georgia's government.

Georgia is still far less authoritarian than Russia or Belarus, but it is fast drifting into the Kremlin's orbit. To appease Mr Putin, its government has refused to join sanctions against Russia or return an anti-aircraft missile system that Ukraine gave Georgia in 2008. "I don't understand why the Georgian government has shackled itself to the Kremlin," Ben Hodges, a former commander of American forces in Europe, said on a recent visit to Tbilisi.

Many Georgians do seem to object. Ukrainian flags are a common sight, as are houses sporting graffiti reading "Georgia is Ukraine; Ukraine is Georgia". Mr Kachkachishvili says the sentiment goes far deeper than the liberal Tbilisi middle class. Some 1,000 Georgian volunteers are believed to be fighting on Ukraine's side. But equally deep is the trauma and fear of war exploited by Mr Ivanishvili's party. Georgian Dream has seen off pro-Ukraine protests and marginalised the opposition by arguing that they risk dragging Georgia into a war with Russia.

The picture is complicated by the presence of some 100,000 Russian exiles who have taken refuge in Georgia from the very regime that still occupies 20% of the country. Most of them are educated young people who openly back Ukraine and are against the war. But they are careful to keep out of Georgian politics. ■

Ukraine

Recycling Russia

KYIV AND UZHHOROD

A campaign to "de-Russify" Ukraine is under way

AT A RECYCLING plant on the outskirts of Kyiv, a short drive from the site of a helicopter crash that killed 14 people (including Ukraine's interior minister) a week earlier, a group of sorters, most of them middle-aged women, are ripping apart hundreds of Russian books. The cover of Tolstoy's "Childhood, Boyhood and Youth", days away from being reborn as a coffee-cup sleeve or an egg carton, goes into one garbage bag. The novel's pages, destined to end up as paper for other books, in Ukrainian, or as cheap toilet paper, go into another. Next comes a selection of poems by Mayakovsky. Then a Soviet physics textbook. Then biographies of Pushkin and Dostoevsky. And so on.

The backlash against Russian culture in Ukraine had been picking up steam since 2014, when Russia occupied the Donbas and Crimea. But Russia's unprovoked invasion of Ukraine, together with the horrors committed by its troops, has sent it into overdrive. De-Russification has mostly been a bottom-up process or a matter of individual preference, as opposed to government policy. Millions of Ukrainians continue to speak Russian without suffering discrimination. But local authorities in many parts of the country are changing street names and pulling down Russian and Soviet statues.

In Uzhhorod, the capital of the western province of Transcarpathia, red stars have been removed from the tombstones of fallen Soviet soldiers. Busts of Alexander Pushkin have disappeared from dozens of towns. In Odessa, a large statue of Catherine the Great, the 18th-century Russian empress who founded the city, was taken down and boxed up in late December and now collects dust in the basement of the city's fine-arts museum. On January 27th Kyiv-Mohyla Academy, one of Kyiv's oldest universities, announced it was banning even spoken Russian, though its president later backtracked and said the ban would not be enforced.

De-Russification has reached literature too. Syayvo, a bookstore in Kyiv, closed at the start of the invasion. When it reopened three months later, the management and some customers came up with the idea of collecting books in Russian, recycling them and donating the proceeds to a char-

Петриківка

Pushing out Pushkin

ity that buys clothes and equipment for Ukrainian troops. Since July, customers have brought in 60 tonnes of books.

Russia, which controlled much of Ukraine from the 17th century, and the Soviet Union, of which Ukraine was part until 1991, repeatedly suppressed Ukrainian language and culture. Russification peaked under Alexander II, a 19th-century tsar who banned teaching, publishing books and staging plays in Ukrainian.

Russia's modern-day tsar, Vladimir Putin, denies the existence of a separate Ukrainian culture. Russian occupation forces in eastern and southern Ukraine have set out to destroy it. Access to Ukrainian news websites has been blocked. Place-names have been changed and Russian spellings have replaced Ukrainian ones. In the devastated city of Mariupol, the occupiers took down a monument to the victims of the Holodomor, the famine to which the Soviets condemned Ukraine in the 1930s and which killed millions of people. Schools are now forced to follow the Russian curriculum. Countless Ukrainians suspected of links to the government in Kyiv have been rounded up and abused. Some have been shot.

The outcome, at least in the rest of Ukraine, is not quite what Mr Putin had in mind. As recently as the summer of 2021, 41% of Ukrainians agreed with the notion that Ukraine and Russia were one people, according to one study. By the spring of last year, after Russia invaded, the number had plummeted to 8%.

Most Ukrainians support the idea of changing Soviet or Russian place-names. Whether Russian writers buried one or two centuries ago should pay the price for today's war crimes is a more divisive question. Like many Ukrainians traumatised by the war, Vasyl, browsing for a new novel at the Syayvo bookstore, says he and his wife, who grew up in Russia, have decided to stop speaking Russian. "It grates on my ears," he says. But he reckons literature should be off-limits, and that turning books into pulp is a step too far. "This reminds me too much of Mussolini," he says, unpersuaded by Mr Dyak's argument that recycling books is hardly the same thing as burning them. "A book is a book."

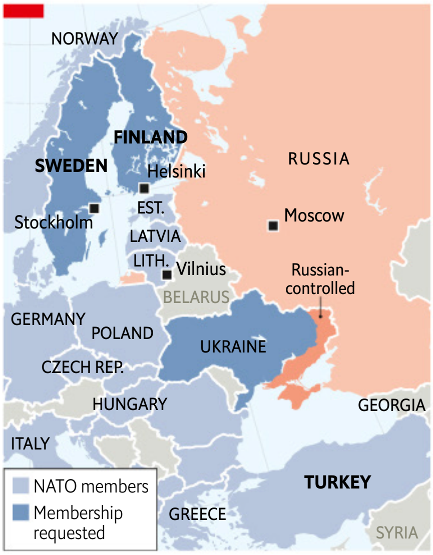
Andrey Kurkov, perhaps Ukraine's best-known contemporary writer, was born in Russia and writes in Russian. "I understand emotions," he says, but adds that some Ukrainian intellectuals are using de-Russification to boost their own patriotic credentials. He knows his own books will probably not be published in Russian until after the war. "The reaction to everything Russian is extremely negative and aggressive," he says. But while Russian-language writers may be ignored in parts of Ukraine, in others, where Russian dominates, he says, they "cannot be removed". ■

Sweden, Finland and NATO

Delayed ratification

ISTANBUL

Turkey plays politics with NATO membership



NOBODY KNOWS what prompted Rasmus Paludan to burn a copy of the Koran in front of the Turkish embassy in Stockholm on January 21st. Mr Paludan, an attention-hogging far-right Danish politician, had torched Korans before, but his choice of location was significant: Turkey is holding up the applications of Sweden and Finland to join NATO. Mr Paludan's demonstration permit was paid for by a Swedish journalist who once worked for a Kremlin propaganda channel, though the journalist denies any current connection to Russia. The Koran-burning led to anti-Swedish demonstrations across the Muslim world. Two days later Recep Tayyip Erdogan, Turkey's president, suspended his talks on NATO accession with both countries.

It has been more than nine months since Finland and Sweden decided to give up their long-standing non-aligned status and join NATO, after Russia invaded Ukraine. Their accession has been ratified by 28 of the alliance's 30 members. Hungary says it will ratify it soon. But Turkey has demanded that both countries first crack down on residents linked to movements that it considers anti-Turkish terrorists, mainly the Kurdistan Workers' Party, or PKK. The three countries struck a deal last summer, and Finland and Sweden say they have done what they promised. Yet Turkey says it is not enough.

"We have fulfilled the memorandum, and it is time for Turkey to act," Tobias Billstrom, Sweden's foreign minister, told *The Economist*. Sweden and Finland have both lifted arms embargoes they imposed on Turkey after it invaded Syria in 2019. In March Sweden will introduce legislation criminalising membership of terrorist groups, including the PKK, a step which required it to change its constitution. But Turkey also wants Sweden to extradite over 100 people, including some whom Sweden considers dissidents with a right to asylum. (Because it long had welcoming asylum policies, Sweden has a large Kurdish community of about 100,000. Finland has just 15,000 or so.)

Turkey's stance is partly campaign politics. Mr Erdogan faces a tough election in the spring or early summer, and has been whipping up nationalist resentment over Sweden's alleged pro-Kurdish, anti-Muslim offences. He demands that Sweden "return these terrorists to us" and that it prevent any further Koran-burning before he will approve its NATO membership. Mevlut Cavusoglu, his foreign minister, accuses Sweden of "taking part in the crime" of burning the Koran. Most Finns and Swedes, however, still expect the Turks to shift gear after the election and ratify their countries' accessions before NATO's next summit in Vilnius, Lithuania's capital, on July 11th. "Many times we have seen domestic politics in Turkey leading to expressions like this," says Mr Billstrom.

Yet that may be wishful thinking. Turkey's ability to veto the NATO applications gives it a cheap lever over European affairs. Mr Erdogan may even think he can use it to press Western countries to reduce their support for Kurdish groups in Syria, says Asli Aydintasbas of the Brookings Institution, a think-tank in Washington, DC.

Mr Erdogan now says he might approve Finland's application but not Sweden's, trying to split the two to increase the pressure. That "wedge tactic" will not work, says Teija Tiilikainen, a Finnish political scientist; the decision to join NATO was premised on solidarity with Sweden. Finland's foreign minister has said that no split will be considered. Like so many European impasses, this one may require intervention from America, which could, for instance, use a long-delayed sale of F-16 fighters as a bargaining chip to get Mr Erdogan to approve the accessions.

While awaiting ratification, Finland and Sweden are not protected by NATO's Article 5 mutual-defence guarantee. But many member countries have signed promises to come to their aid if they are attacked in the interim. Meanwhile, they are further integrating their armed forces with NATO. Being allowed into committee meetings at the alliance's headquarters was an eye-opener, says Robert Dalsjo, a Swedish defence expert: "It's like having been to a house several times and suddenly they open rooms you didn't know existed." ■

Germany

A paler shade of Green

BERLIN

Climate climb-downs fail to damage Germany's Greens

The dream Green team

IMAGINE BEING a Green party in a crisis-hit government. Which news image would you dread more: footage of monster mechanical claws tearing up lush fields to expand a coal mine, or of a riot squad dragging away Greta Thunberg, the impish, Swedish-born patron saint of climate-change activism?

Little more than a year into their stint in a three-party national government, Germany's Greens found both of these PR disasters spooling relentlessly across millions of televisions. The events took place in mid-January near the tiny hamlet of Lützerath in North Rhine-Westphalia. In what environmentalist groups had billed as a last stand, thousands of demonstrators braved freezing drizzle to protest against the expansion of an open-cast lignite mine, a city-sized gash of beige in a sea of green. After several days of muddy scuffles against a science-fiction backdrop of giant diggers, police bodily removed the last protesters, including Ms Thunberg.

The political blow to the Greens should have been huge. Spawned by sandal-clad anti-nuclear hotheads in the 1980s, the party now sits in power not just in Berlin but in ruling coalitions in 12 of Germany's 16 states, including North Rhine-Westphalia. Elected to slash emissions and protect nature, the Greens have instead been forced, thanks to Russia's invasion of Ukraine and disruption of energy flows to Germany, into embarrassing backdowns across a range of environmental issues. On their watch both nuclear and poison-spewing coal-fired power plants have enjoyed a new lease of life, fresh infrastructure for natural gas has been built, and ugly mines for especially dirty lignite or "brown coal", such as the one at Lützerath, have grown. As one sodden protester at the doomed hamlet declared with a sneer, "The Greens? Green with mould and green with dollars is what they are."

Yet in spite of accumulating bruises on their once-pristine environmental ideals, the Greens appear to be growing not weaker but stronger. Opinion polls show that in contrast to its two coalition partners, the bigger Social Democrats (SPD) and smaller Liberals (FDP), Germany's Greens score higher now—garnering close to 20% of "voter intentions" in a national election—than the 15% they got when they were actually elected. Their two top figures in government, Robert Habeck, the vice-chancellor and economy minister, and Annalena Baerbock, the foreign minister (both pictured), have over the past year consistently ranked as Germany's two most popular politicians, far out-charming Olaf Scholz, the dry-as-a-cracker chancellor.

More surprising, the Greens have gained converts not by responding to the Ukraine crisis with calls for peace and moderation. Both the party leadership and its supporters have instead gone beyond every other party, including the conservative Christian Democratic Union (CDU) of former chancellor Angela Merkel, in pushing for stronger action against Russia. To the occasional chagrin of the SPD, the Greens have argued strongly for Germany to help arm Ukraine, including with heavy weapons. After Mr Scholz's recent, belated decision to supply German-made Leopard tanks, polls showed that more than three-quarters of Green party members backed the move. Among Germans overall, support was a more squeamish 54%.

Not long ago few German Greens would have dreamed that protesters outside the chancellor's office crying "Free the Leopards" were lobbying not for nature conservation but to send man-made killing machines into a war zone. Back in the 1990s, during the party's first time in a national coalition, its most prominent politician, then-foreign minister Joschka Fischer, split the Greens into bitter factions by backing the dispatch of German troops to impose peace between Serbia and Kosovo.

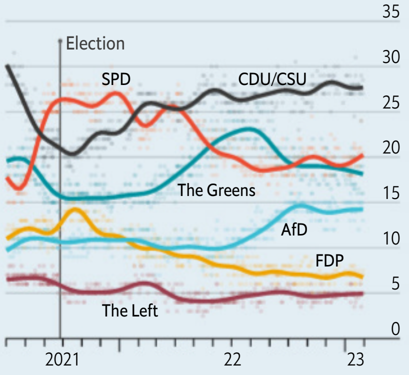
Omid Nouripour, the party's current co-leader, says that while the debate between *realos* and *fundis* persists, the dominant trend in the party is pragmatism. Many hardline environmentalists did leave the party 15 years ago, yet its overall membership has quadrupled. Mr Nouripour says that the party used to compete mainly with the left-leaning SPD. "But since Angela Merkel pulled the CDU towards the centre we can now fish in two ponds."

Mr Habeck, whose brief includes climate change as well as energy, embodies this pragmatic bent. Instead of shying away from touchy environmental issues he tends to confront them head on, armed with piles of facts and a quiet tone of sincerity. Asked about the Lützerath mine, he has patiently explained that under a deal worked out by his government, only half the lignite that its operator had planned to extract will ever be removed, with the deadline for its closure brought forward by eight years to 2030. Mr Habeck insisted in an interview with *Der Spiegel*, a weekly magazine, that the reason is not an abandonment of climate goals, but a temporary response to a pressing energy crunch. "There are many good reasons to demonstrate for climate protection," he said. "But Lützerath is simply the wrong symbol."

Polls suggest that most Germans are, however, puzzled by something that Mr Habeck seems to think is the "right" symbol. Through much of last year, even as the cut-off of Russian energy supplies sent prices soaring and raised the spectre of industrial collapse, he insisted Germany should stick to a schedule set under Ms Merkel and close its only three remaining nuclear power plants by December. Mr Scholz had to intervene with a compromise, allowing the plants, which still produce 6% of Germany's electricity, to keep running until April. Even many Greens may not see this as much of a victory. ■

The Green revolution

Germany, voting intention in federal election, %



Source: National polls

Charlemagne | Return to centre

It turns out there is nothing inevitable about the rise of populism in Europe

HOLLYWOOD CASTING directors do not get to vote for European heads of state. But if they did, they would plump for Petr Pavel. Square-jawed and white-haired, the 61-year-old Czech looks every bit the airborne platoon leader turned top NATO general, then aspiring statesman: think Eisenhower or de Gaulle, special-ops variant. Mr Pavel's countrymen also saw the appeal, handing the retired soldier a decisive 58% win in a run-off for the Czech presidency on January 28th. Even more enthused at Mr Pavel's triumph were those Europeans fretting that populism had become an unstoppable force across the continent. The liberal, pro-EU Mr Pavel trounced Andrej Babis, a billionaire elite-bashing understudy of Donald Trump. It is but one election in a mid-sized European country. But it marks another blow for the narrative of European politics shifting inexorably to extremes.

The political story of the EU in the past two decades has been how populists have gatecrashed what used to be a cushy, mostly liberal, cartel. Elections in Europe once typically pitted centre-right candidates against centre-left ones. Since the turn of the century, but especially from about 2015, candidates from the post-fascist fringe and the still-Marxist one went from being marginal to central. The rise of populists variously inveighing against migrants, gays, globalisation, modernity and all that goes with it has shaken polities from Sweden to Italy, Denmark and Greece. On the continent every election now feels like a test of whether electorates still abide by the post-war centrist consensus, or whether once beyond-the-pale politicians like Marine Le Pen in France should get a shot at upending it. In places like Poland, Hungary and most recently Italy, the outsiders have prevailed.

The Czech result shows that populism's bubble can be deflated. Mr Babis had already been ousted as prime minister (the more important position in Czech politics) in 2021, albeit only because his top-ranked party could not find partners to form a coalition. The presidency for the past decade had been in the hands of Milos Zeman. He was once a centre-left premier but his stint as head of state included racist and homophobic rhetoric—not to mention support for Russia. Predictably, he had supported Mr Babis. Mr Pavel in contrast stood out for his unflashy competence when he was in uniform. He is well-liked in European circles, not least by the French, who showered him with honours after a unit he led saved dozens of their soldiers from capture during a mission in the former Yugoslavia in 1993.

It is too soon to say that the populist bubble has burst. But the sense of inevitability of populism's progress has faded. Mr Babis's defeat comes after the recent political exits of Trumpy politicians in Slovenia and Bulgaria (though Bulgaria has also since turfed out a liberal premier, and is gearing up for new elections), not to mention America and Brazil. Central and eastern Europe has been particularly fertile ground for populists. Voters have felt the whiplash of rapid economic and social change since the fall of communism in 1989. Some resent being made to feel that they can aspire to nothing but to be more like the West—welcoming to migrants, unfussed about gay marriage—yet never quite catching up. But the West has had its share of populist triumphs too. Britain left the EU on the back of dodgy promises straight out of the populist playbook. In Sweden a post-fascist party supports the new government; in Italy, under Giorgia Meloni, one leads it.

Populists are facing headwinds for several reasons. One is the war in Ukraine. It has tainted Vladimir Putin, the politician many European populists hold in highest esteem. The war also fractured an alliance between Poland (whose populists support Ukraine) and Hungary (whose "illiberal democrat" prime minister Viktor Orban still lauds Russia). Leaving the EU is seen by ever more voters as a mistake after Britain's wretched display. And the price tag of populism has become clearer. Thumbing a nose at the Brussels bureaucracy enforcing EU rules—on how courts should be run free of political interference, say—used to be *de rigueur* for the likes of Mr Orban, whose base would lap up stories of flustered Eurocrats. Not so much, these days. A slug of EU funds, notably those tied to the bloc's recovery from covid-19, is tied to national governments meeting criteria crafted in Brussels. Populists can refuse to accede to Brussels' demands, but that means being deprived of money that voters know would help in a cost-of-living crisis, as has happened in Poland and Hungary.

Even when populists win it is not clear that their policies do. In Italy, Giorgia Meloni is not only in power, her party is surging in the polls. That is not an indication of populism's success, however: Ms Meloni has governed broadly as a centrist in her first hundred days. She has stayed away from her counterparts in Poland and Hungary, favouring meetings with France's Emmanuel Macron and the European Commission's boss, Ursula von der Leyen, instead. The Italian leader doubtless took note of the rise of Ms Le Pen, who has toned down her Euro-bashing over the years and has her eye on the 2027 presidential race.

Off-centre

Populism still matters. In the same way politicians like Ms Meloni modify their ideas once in office, mainstream politicians have added populist ones to their repertoire. A resurgence in illegal migration in recent months is being dealt with in part with policies once unpalatable to the centrist consensus. Talk of building fences at the EU's borders and cutting development aid to poor countries that fail to help Europe stymie migration flows was once unthinkable. These measures are now firmly on the EU agenda.

Liberals hope populism's moment is passing because voters see that it is long on rhetoric yet short on solutions. That is true, if a bit optimistic. Elite-bashers still have many political victories left in them. But what Mr Pavel's triumph shows is that they will suffer plenty of drubbings, too. ■

Environmentalism

Green v green

MEDICINE BOW, WYOMING

Blocking clean-energy infrastructure is no way to save the planet

REBUILDING AMERICA'S ECONOMY

WINTER IS WINDY season in Wyoming. On a particularly gusty day, those brave enough to travel on the I-80 highway will find that their fingers curl in a death grip around the steering wheel as winds buffet the car. The side of the road becomes a graveyard for lorries that have been blown over. Yet the same terrifying gusts make Carbon County, of all places, an ideal site for a wind farm. PacifiCorp, the biggest utility in the American West and a subsidiary of Berkshire Hathaway's energy arm, operates a suite of wind farms in the county. Philip Anschutz, a billionaire who made his fortune from fossil fuels, wants to turn his Wyoming ranch into a sea of turbines.

Wyoming (population: 580,000) cannot possibly use all of the energy it can produce. In order to meet President Joe Biden's goal of decarbonising the economy by 2050, America needs to move energy from the windiest and sunniest places to those with the most demand. That means using the megawatts generated by Wyoming's winds to charge a Tesla in Los Angeles. But a bureaucratic thicket stands in the way. Both PacifiCorp and Mr Anschutz have spent more than a decade trying to get high-voltage transmission lines that cross multiple states approved. TransWest Express, Anschutz Corporation's proposed line from Wyoming to the Nevada-California border, has yet to break ground.

The Inflation Reduction Act (IRA), Mr Biden's signature legislation and the most ambitious climate law America has ever passed, includes all manner of tax credits for clean-energy projects. But the process to get them approved can be long, onerous and litigious. McKinsey, a consultancy, reckons it can take up to five years to get a permit for a solar farm and seven for an onshore wind farm. An ambitious timeline to build a high-voltage transmission line is at least ten years, says Scott Bolton, vice-president of transmission development at PacifiCorp. The Rhodium Group, a consultancy, estimates that the investments in the IRA have the potential to cut emissions by 32-42% below 2005 levels by 2030. But a recent study from Princeton University's ZERO Lab suggests that America would need to more than double its average pace of transmission expansion over the last decade to realise that goal.

The rush to green the grid has created rare bipartisan consensus that it takes too long to build things in America. Permit reform, a hot topic among energy nerds and few others, has become one of the most important issues the 118th Congress could tackle. Without it, America risks allowing the investment boom the IRA unleashes to be for naught. But the debate over whether and where to build green infrastructure has pitted climate hawks against their erstwhile allies: environmentalists.

By the 1960s, Americans were realising the threats from pollution. Rachel Carson's

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37 Preventing overdoses
38 Lexington: Bad rap and debt crap

“Silent Spring” exposed the dangers of toxic chemicals. California’s central coast was blackened by an oil spill. Ohio’s Cuyahoga river caught on fire. In response, America passed several world-leading laws aimed at reducing pollution and protecting the country’s natural resources. During his presidency, Richard Nixon created the Environmental Protection Agency. He signed the National Environmental Policy Act (NEPA), the Clean Air Act and the Endangered Species Act. Earth Day was born.

These laws and agencies laid the foundation for modern American environmentalism, which has focused on preserving nature. Conservation is by definition conservative (which perhaps helps explain Nixon’s support for it). NEPA ensures that the federal government has to consider the environmental consequences of a project before permitting its development. Completing an “environmental impact statement” can take years. If someone feels that the government failed to study something, they can sue, elongating the process further. Environmentalism became a crusade of stopping things being built.

Fast forward a few decades and the only way to mitigate climate change is to forsake fossil fuels in favour of green energy, which will require building massive amounts of new infrastructure—often on undeveloped land. A recent report from the Brookings Institution, a think-tank, suggests that wind and solar farms require at least ten times more land per unit of power produced than gas- or coal-fired power plants. Stand next to a turbine and it is clear why. The 100-metre blades typical of modern turbines need to be spaced out across prairie or atop mountain ridges. In a scenario where America relies entirely on renewables by 2050, Princeton’s modelling suggests that solar farms would take up an area the size of West Virginia. If America embraces nuclear power and carbon capture, the amount of land needed for renewables would shrink.

Climate-change hawks and conservationists used to fighting on the same side on behalf of the environment now find themselves weighing the benefits of utility-scale renewables against the protection of ecosystems. Biodiversity has its own important role to play in fighting climate change. Safeguarding forests that act as carbon sinks will be crucial, for example. But land-use trade-offs are inevitable.

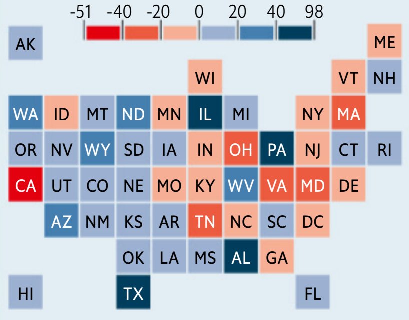
The permitting process has become the favoured vehicle by which people can try to block projects they don’t like. Legal challenges often revolve around threats to endangered species. In Wyoming, environmentalists worry that wind farms and transmission lines will harm sage-grouse habitat. Native American tribes sue to stop officials from approving energy projects on land sacred to them. A recent study by researchers at the Massachusetts Institute of Technology (MIT) identified 53 big wind, solar and geothermal projects that were delayed or blocked between 2008 and 2021. A third of them faced permitting difficulties. NEPA challenges make up the largest proportion of federal climate-change litigation in America, according to a database kept by Columbia University.

A permitting delay will not necessarily kill a project, but it can make it more expensive. PacifiCorp originally budgeted about $1.3bn for a transmission line from Wyoming to Utah. Some 15 years later, the cost has climbed to $1.9bn. For new nuclear plants, which are extremely capital-intensive, delay can mean death.

Bureaucratic spaghetti

Government is part of the problem. Many federal agencies work across environmental policy, and sometimes one doesn’t know what another is up to. The dysfunction is not always accidental. The Department of the Interior, which manages America’s vast public lands, and the Department of Energy are sometimes at loggerheads. Steven Chu, Barack Obama’s first energy secretary, says he initially had the support of Ken Salazar, his counterpart at Interior, when he tried to speed up permitting for transmission lines. “And then Ken calls me up,” he recalls, “and says, ‘Steve, I have to take back my support for this…my people at Interior are against it.’” According to Mr Chu, bureaucrats at the Fish and Wildlife Service, an agency within Interior, were worried about how more power lines would affect hunters and anglers.

The Biden administration seems similarly confused about what to prioritise. The IRA is Mr Biden’s biggest accomplishment, and he has pushed for permit reform in Congress. But the White House is also pursuing the “America the Beautiful” initiative, which aims to conserve 30% of the country’s lands and waters by 2030. Each goal is admirable, but which wins when the best place to put a solar farm is pristine desert, home to endangered tortoises? And can that decision be made quickly?



Haves and have-nots

Electricity generation minus consumption, GWh
2021

Sources: EIA; McKinsey

Not all opposition to clean-energy projects stems from earnest concerns for ecosystems or tribal sovereignty. NIMBY (not in my backyard) activists are expert at using NEPA to thwart infrastructure that will obstruct their view. Laine Anderson, the director of PacifiCorp’s wind farms, says the most common complaint he hears from locals is that the turbines mar the desolate beauty of the sagebrush sea. The Sabin Centre for Climate Change Law at Columbia University found that local governments in nearly every state have enacted laws restricting renewable-energy development. In 2021 Ohio’s legislature passed a law allowing counties to declare parts of their domain off-limits to renewables; at least ten have done so.

Permitting is not just a headache for the federal government. Nearly a third of states have their own versions of NEPA. The California Environmental Quality Act, known as CEQA, has been weaponised by the state’s tenacious NIMBYS to block development. California’s stasis is particularly painful given the housing shortage that has contributed to cost-of-living and homelessness crises. Last year Woodside, an affluent Bay Area suburb, tried to declare the town exempt from development because it was mountain lion habitat. (It did not succeed.) One study suggests that 60% of CEQA petitions filed in 2018 targeted proposed housing developments.

California exemplifies the worst excesses of the NIMBY movement, but it is also the place making the most progress. Gavin Newsom, the Democratic governor, declared that “NIMBYism is destroying the state”. The state’s attorney-general launched a “housing strike force” to limit the abuse of environmental laws. YIMBY (yes in my backyard) politicians are winning office and passing laws to streamline permitting and relax zoning rules, which govern what can be built where.

YIMBYism will be a harder sell in Washington, DC. Democrats and Republicans agree, in theory, that the planning process is broken. But progressives are wary of weakening environmental laws. Several Democrats torpedoed a permitting-reform bill proposed by Joe Manchin, the Democratic senator for West Virginia, last year because it would have approved a natural-gas pipeline in his state. Republicans are usually happy to slash environmental regulations, and have called for permitting reform for years. But they would like to make it easier to build fossil-fuel infrastructure, too. John Curtis, a Republican congressman from Utah who founded the Conservative Climate Caucus, thinks frustrations from both parties will force compromise. “I believe you can name any goal in either energy or in climate, and it’s being blocked by permitting right now," he says.

There are a few reforms that could attract bipartisan support. Standard timelines for environmental reviews could help speed decisions. Rather than studying how projects will affect endangered species on a case-by-case basis, the Interior Department could create regional maps of areas fit, and unfit, for development. They might like what they find. An optimistic new study published in *PNAS*, a journal, found that the 11 western states could reach net-zero emissions by 2050 while protecting sensitive habitats, with little extra cost. The Biden administration could empower an obscure permitting council, which has existed since 2015, to co-ordinate the alphabet soup of agencies involved. The Federal Energy Regulatory Commission could be given the power to approve big transmission lines, as it does for natural-gas pipelines, a fact that green groups are quick to point out.

Local opposition is inevitable. Holly Bender, the senior director for energy campaigns at the Sierra Club, a conservation group, argues that involving people affected by a project at the start can ease tensions. Research from MIT suggests that early collaboration may deter litigation later.

America needs to undertake one of the biggest building booms in its history. Permitting energy infrastructure pits hyperlocal concerns against the public good. There is no perfect place to build a wind farm or transmission line. Progress of any kind will require trade-offs. Wyoming's high plains look different where they are overrun with turbines: slightly less wild, though no less imposing. But the spinning blades, propelled by the state's ferocious winds, are evidence of America's great green hopes. And that is beautiful in its own way. ■

Police violence

Black and blue

MEMPHIS

Why holding bad police officers to account is so difficult

On the street corner in south-eastern Memphis where Tyre Nichols, a 29-year-old black man, was beaten almost to death by at least five police officers on January 7th, well-wishers have left flowers, teddy bears and a miniature skateboard. It is a relatively modest memorial for a man whose killing has shaken up all of America. On January 27th the Memphis police released four videos showing how Mr Nichols was dragged from his car and, while offering no resistance and trying to comply with shouted demands, was pepper sprayed, kicked and threatened with a taser until he ran away. He was then apparently chased down and caught and beaten more, with the kicks continuing even as he cried out for his mother. Once subdued, cops stood around joking, offering no medical support. He died three days later in hospital. The morning before the video was released, five police officers were charged with second-degree murder; the day after, the "elite" unit to which they belonged, called the "Scorpion unit" (for "Street Crimes Operation to Restore Peace in Our Neighbourhoods"), which had been launched only in late 2021, was disbanded.

END POLICE TERROR

Seems simple enough

The speed and certainty with which the authorities in Memphis acted stands in contrast to previous high-profile police killings. That charges were brought before the video was released may have helped to mute protests, by delivering the beginnings of justice. That is owed at least in part to Steve Mulroy, the Shelby county district attorney, a progressive Democrat who was elected last year, defeating a hardline Republican incumbent. "If the previous district attorney were still in office, I believe Memphis would be on fire right now because I don't think she would have charged anybody," says Earle Fisher, a Baptist pastor and activist for police reform.

In fact a more traditional response—evasion, lies and inaction—was perhaps only just avoided. A police statement issued while Mr Nichols was still in hospital referred to a "confrontation", and omitted the details. In an internal police report on the incident, leaked and posted on social media, one officer accused Mr Nichols of starting to "fight with detectives" and trying to grab one's gun—claims the videos reveal as pure invention. Had the case been slightly more ambiguous, or the video less clear, it is hardly guaranteed that the wheels of justice would have turned so fast. So why is it so difficult to hold police accountable in America?

According to Craig Futterman, a University of Chicago law professor who has led several lawsuits against police departments, even in the most troubled police departments, the vast majority of officers are never accused of being violent. A minority—perhaps 5% to 10%—account for almost all complaints, and indeed for a huge share of money paid to victims of police misconduct by cities after lawsuits. But the entire system often protects the minority of bad cops from any consequences for their actions. "For some reason they thought that they could get away with it," says Sharon Fairley, also of the University of Chicago, about the officers in Memphis. "There's something about that system that made them feel that way."

At the level of political leadership, it is costly to hold a bad officer to account. If a police officer is fired, or worse, convicted of brutality, then the risk is that hundreds of previous arrests will suddenly be questioned. In the short run, that means huge negative publicity, as well as potential lawsuits. Real criminals who were in fact rightly arrested may go free. "It takes a lot of courage" to face that, says Mr Futterman, and few mayors have it—especially when violent crime rises, as it has in recent years. And so cover-ups are tempting.

That culture in turn filters down to beat officers. Many police officers believe that violence is necessary to prevent crime. But even if cops are disgusted by their colleagues' actions, they fear personal consequences if they blow the whistle. Instead, cops who want to avoid brutality tend to choose to stay away from those units which have to use force most often. Indeed, Mr Fisher says that he knows police officers personally in Memphis whom he trusts to behave decently and who refused to join the Scorpion team. "I know how infectious that culture can be," he says.

A sad irony is that cities with the most ingrained culture of bad policing tend to suffer the most crime. In Memphis, according to data from the Tennessee Bureau of Investigation, though police arrest tens of thousands of people, just 39% of murders in 2021 were cleared. In 2020, according to FBI data, the Memphis metropolitan area (including the suburbs) had the highest murder rate of any large city in America. Just as a lack of accountability leads bad cops to commit violence, a low clearance rate eventually leads to more murders. When people cannot trust the justice system to punish lawlessness, disputes escalate into killings. All too often, that in turn deepens the reliance on thuggish policing like Memphis's Scorpion unit. Mr Nichols's death, in all of its sheer awfulness, may be a step towards breaking the cycle. ■

Fishing

Ice, ice, maybe

ST CROIX RIVER

New tech has sparked a boom in ice fishing. But global warming may kill it

In ancient Israel, somebody walking across a body of water constituted a miracle. In Minnesota, it just means that it is ice fishing season. On a late January afternoon at a bend in the St Croix river, which divides the state from Wisconsin, half a dozen tents are visible, spread evenly across the ice. Inside each one sits one or two people, fishing rods (and perhaps a beer) in hand. Every now and then somebody new arrives, pulls a sled across from the car park, and starts drilling, briefly disturbing the quiet with the sound of an electric motor. All across the surface of the river, the ice is pockmarked with holes about six inches wide. Overhead, a bald eagle circles, perhaps wondering what on earth these people are doing.

When bars, restaurants and other indoor activities closed in 2020 as the coronavirus raged, outdoor activities boomed. Skiing, golf, hiking, tennis, cycling: all attracted new adherents. Yet ice fishing has grown particularly fast. Even before the pandemic, the sport was defying a decline in fishing in general. In 2020, the Minnesota department of natural resources sold just over 1.2m fishing licences, or roughly one for every five residents of the state, the highest number in at least two decades. Though those licences cover summer fishing too, many adherents say that the winter season is now actually more important. The reason why is that it has become a lot easier, thanks to new technology. It is oddly revealing of what Americans want when they venture into the great outdoors: isolation, peace and quiet, but with a good degree of comfort and the chance to buy a lot of expensive paraphernalia.

Standing outside his tent on the ice, with his dog, Justin Fodor, a heating and air conditioning technician who lives in St Paul, explains that he started ice fishing a few years ago, at first with little more than his summer rods and lines. “I came out just with a drill, a table and a chair, I didn’t even have a hut”, he says. But as time has passed, he has bought plenty of gear, and in turn, goes out more to use it, enjoying the chance to bond with his friends. As well as a neat folding tent-hut and a sled, Mr Fodor now has a sonar, with which to spot fish underwater, a battery powered “auger”, or ice drill, and a portable heater. With the sonar, “it’s more like a video game now”, says Mr Fodor, admiringly. Even if you catch nothing, you can still see the fish you almost caught.

According to Tad Johnson, who runs the Brainerd Jaycees Ice Fishing Extravaganza, an annual tournament which draws thousands of people to fish on one lake in central Minnesota, all of this gear has helped lure newcomers in. It “has evolved so much that really anyone can go out and ice fish in relative comfort”, he says. The sonar is not even the most dramatic development. In recent years, the most enthusiastic ice fishermen have invested in “wheelhouses”—essentially caravans that can be pulled out onto the ice by a truck or a snowmobile and fixed in place with a crank. The fanciest houses feature generators, satellite televisions, hot stoves, beds and even showers, meaning that fishermen can stay on lakes for days at a time. Ice Castle Fish Houses, the biggest manufacturer, advertises the chance to buy somewhere to escape your mother-in-law.

How long can this boom last? One risk is that climate change is eating away at the season, and no amount of equipment can guarantee a frozen lake. Fishermen in more southern parts of the Midwest have had no ice at all so far this year. In Maine in late December the authorities warned fishermen to check the ice, as much of it was too thin to venture onto. Two men drowned in the state in early January. Even in the Gopher State, which is so bitterly cold that most lakes are still frozen reasonably solid, it rained earlier this year. Mr Johnson says next year they are moving the date of the ice-fishing extravaganza from late-January to February, to guarantee safer ice. The scale of the problem is not yet clear, but your correspondent, whose own fishing was not particularly successful, explored every angle. ■

The playstation has frozen

Covid-19 fraud

Height of heists

WASHINGTON, DC

Why it was so easy for crooks to steal money meant for pandemic relief

In “Goldfinger”, the seventh novel in Ian Fleming’s James Bond series, Auric Goldfinger plans to steal $15bn from the federal government with the help of nerve gas, a stolen atomic bomb and operatives from a clutch of different criminal groups. With the emergence of covid-19 in 2020, an evil genius wanting to steal that much had a far easier option than breaking into Fort Knox. Armed only with stolen social security numbers, made-up company names and a large dose of sheer gall, he could simply have got the government to give him the money.

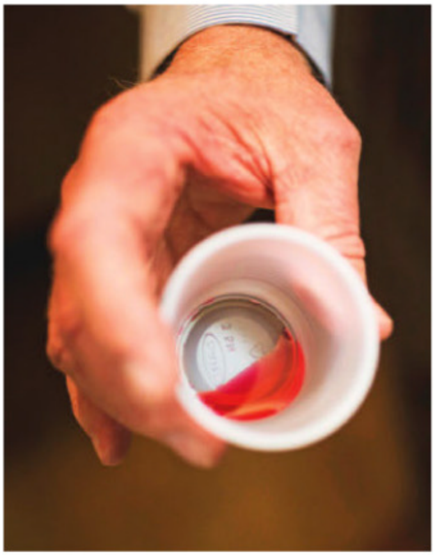
According to estimates from the Secret Service, as much as $100bn of money intended to help people get through the disruption of the pandemic was stolen. On February 1st, the newly Republican controlled House Oversight Committee held its first hearing on “waste, fraud and abuse” in the administration of America’s covid relief plans. The hearings promise to turn the issue into a political one.

The bulk of the money stolen uncovered so far came from two programmes in particular—the federal expansion of unemployment insurance (UI) and small business loans distributed through the Paycheque Protection Programme (PPP). Both were the result of two laws signed by Donald Trump: the Families First Coronavirus Response Act and the Coronavirus Aid, Relief and Economic Security Act in March 2020. Criminal indictments of some of those accused of stealing so far suggest that extracting money from these schemes was not especially difficult. By using stolen social security numbers, together with made up or borrowed employer names, in many states fraudsters simply applied for benefits and had debit cards posted to addresses where they could pick them up and cash them.

Easier to steal from still was the PPP scheme. This gave loans through commercial banks to firms to cover payroll costs. But in the aid of speed, due diligence was limited. By inventing hundreds of fictitious employees, some fraudsters succeeded in stealing millions of dollars. Much was probably taken by opportunistic crooks; but according to Joseph Gillespie of the FBI, well-established organised crime groups also quickly saw the opportunity. “They were distinctive in knowing that when there are public benefit programmes, they are rife to take advantage of,” he says. In December, the Secret Service reported that hacking groups associated with the Chinese government were among the groups stealing from state uninsurance relief schemes.

Why was fraud so easy? Some was probably inevitable, says Michele Evermore, a fellow at the Century Foundation, a think-tank, who worked in the department of labour from late 2021 to December 2022. “There was this tremendous public pressure on state UI systems to get money out of the door,” she notes. Countries all over the world suffered fraud as speed was prioritised over stringency. But Ms Evermore reckons that America may have been especially vulnerable because of its fragmented, federal systems. Including the District of Columbia, Puerto Rico and the US Virgin Islands, there are 53 different unemployment insurance systems. Even before the pandemic hit, many schemes had long been underfunded; administrative spending had fallen consistently for 20 years. In some states, the systems still use a mainframe programming language from the 1950s and 1960s. But even states with “modernised” systems struggled, sometimes more, because newly-purchased off-the-shelf IT systems had more holes in them than well-understood ancient ones.

In launching its hearings, the House Oversight Committee’s chairman, James Comer, argued that “with massive government spending comes opportunity for waste, fraud and abuse”, and that Joe Biden’s administration had let this happen. In fact, much of the theft probably happened in the earliest stages of the pandemic, when Donald Trump was still in the White House and authorised the spending splurge. And at least in terms of preventing people from falling into penury, the schemes were a success. As more and more trials uncover the extent of the theft however, the public may well forget that. ■



Preventing overdoses

Nope-ioids

NEW YORK

A pandemic experiment is about to be made permanent

TAKING DELICATE sips, as if it were hot tea, it takes the elderly patient three goes to finish her shot glass of bright liquid. The cherry flavour is the best, her nurse explains, but it is still pretty bad. Nevertheless, she rinses the cup and drink the remains, so as not to waste a drop. The methadone will prevent opioid withdrawal and stave off her cravings. The vast majority of the 500 patients at the methadone clinic at St Barnabas Hospital in the Bronx have to visit six days a week. Staff try to make it welcoming, with birthday celebrations and snowglobes and bobbleheads on desks, but the daily visits are still a hassle, Elena, the nurse explains. She has worked in the clinic for a dozen years: some patients have been coming in even longer.

Medications for opioid addiction have been used in one form or another for half a century in lots of countries and they are effective. Studies find that they reduce the risk of a fatal overdose by 80% and help addicts avoid relapse, HIV and hepatitis. But just 22% of Americans with an opioid problem got medication for the condition in 2021. Opioid overdose deaths have spiked, from around 50,000 a year before the pandemic to 80,000 in 2021.

It is currently annoying to get methadone, as the Bronx residents fighting a bitter wind to get to St Barnabas can attest. Clinicians fear misuse. Methadone is still an opioid and has a street value. Too much can cause an overdose. So treatment has been tightly controlled, at clinics with observed dosing (which is why patients sip, rather than take a pill which could be hidden under a tongue). But in March 2020, as people stayed home and tried to avoid medical facilities, federal regulations were relaxed to allow stable patients to take home enough to last 28 days. Those changes might now be made permanent, as part of what SAMHSA, the federal regulator, calls the biggest shift in 20 years.

Doctors in Britain, Canada and Australia have been prescribing take-home methadone since the 1960s. As its use expanded in America during the pandemic, methadone overdose deaths did not spike and addicts were more likely to stay in treatment. “We did as many of those as we could,” explains Luis Rosario, a counsellor at St Barnabas. Despite fearing some “sneaky behaviour” of stashing or reselling bottles, he says “it went surprisingly well”. Now seeing some patients only having to come in once a month is motivating for others.

The federal government is also proposing changes to regulations covering buprenorphine, another drug used for opioid addiction. Unlike methadone, buprenorphine is less liable to abuse and can be prescribed by a range of clinicians and doled out in pharmacies. The new rules would make online prescriptions, another pandemic-era liberalisation, permanent. “This is a really big deal,” says Keith Humphreys, of Stanford University. “We don’t have enough providers–we have huge gaps in the country where there just isn’t anybody for hundreds of miles around.”

More providers will be available soon: for years, clinicians have needed extra training and a specific waiver to use buprenorphine to treat addiction (prescribing it for pain needed no such additional bureaucracy). But, folded into the Omnibus Spending Bill, passed by Congress at the end of 2022, was a provision scrapping that waiver. Now anyone with a general Drug Enforcement Agency licence will be able to prescribe it–from family doctors more used to doling out sleep aids to psychiatrists giving out ADHD medications.

For take-home doses of methadone to work, and prevent more deaths, federal changes will not be enough. State laws will need to change too: 20 states currently have more stringent regulations than federal law requires. “The idea that loosening the rules around methadone take-homes will automatically translate” into doses being actually taken home is “naive”, explains Erin Madden, a professor at Wayne State University. Many states also needlessly regulate the number of methadone clinics with strict zoning laws. West Virginia has blocked any new clinics since 2007. Increasing access to treatment is urgent. These medications “need to be easier to access than illicit drugs and they’re not,” explains Dr Madden. That is a problem. ■

Lexington | Bad rap

Republicans are right that the America's budgeting is a joke, but threatening its credit is worse

Although no other two-word combination may so prompt eyes to glaze and minds to wander, the history of America can be understood as a struggle over its budget process. After colonial legislatures restricted governors' powers to tax and spend, parliament struck back by passing the Stamp Act to tax the colonies—and everyone knows the trouble that led to.

After the Declaration of Independence, the articles of confederation gave each state a veto over federal borrowing, dooming America's credit and stunting its growth. Even Thomas Jefferson, that scourge of big government, saw the problem. While serving as minister to France he wrote to James Madison in 1788 that America had to prove it could be trusted to pay its debts. "The existence of a nation, having no credit, is always precarious," he wrote. Jefferson supported the Constitution, with its enhanced federal powers, partly to boost America's reputation as a borrower.

Alexander Hamilton then persuaded him to go further. As the first Treasury secretary, Hamilton urged consolidating the debts of individual states and imposing new tariffs to pay them off. America's debt "was the price of liberty," he told Congress in 1790, and sound national credit would swell "the individual and aggregate prosperity of the citizens". Or, as his avatar would exhort "Jefferson" on stage more than two centuries later, good credit was "a financial diuretic/How do you not get it?"

It was in that grand tradition, though with less evident grandeur of vision, that Kevin McCarthy, the House speaker, visited the White House on February 1st to square off with President Joe Biden over the budget. Even an imagination as rich as Lin-Manuel Miranda's might struggle to conjure an epic rap battle from this matchup. (Sampling from their public remarks—Biden: The last guy who was president/increased the debt by 25 percent. McCarthy: (*dabbing*) When do you want to play/I'm not going to just move on the same way!)

And yet, as Mr Miranda might put it, history has its eyes on them: America's credit teeters in the balance. Pressured by his berserker caucus, Mr McCarthy is demanding cuts in exchange for raising the debt ceiling, the limit to federal borrowing. The standoff has Washington's jaded federal class rolling its eyes, as it has learned to do from past confrontations, while—it also does this every time—mumbling, as a warding spell, that this time may be different. It may be, given Mr McCarthy's weak hold on a majority.

These debt-ceiling fights are American governance at its most stupid. As achievements in hypocrisy and self-defeat, they cannot be beat. When Republicans had unified control of government under Donald Trump, they freely raised the ceiling and, with it, the debt, while Democrats, for all their piety now, have also used the debt ceiling for leverage. As for self-defeat: the last time a Republican House pursued such brinkmanship the president was, of course, a Democrat (Barack Obama), and the result was a jump in rates that may have added half a billion dollars to the debt.

These episodic standoffs are revelatory also because they expose an underlying erosion of governance. The Republicans who are stamping their feet have a point. The budget process, if called to account for the meaning of either word, makes a mockery of both. While over the years the branches of government traded authority over budgeting, someone was always taking it seriously. This century, that has changed, as the debt-to-GDP ratio has almost tripled, to 98%. Debt held by the public stands at $24trn, and 7% of federal spending—some $400bn a year—goes to service it. After decades of low inflation, rising rates have reminded Americans how debt can become dangerous.

By law, Mr Biden is supposed to submit his budget on the first Monday in February, but he is going to miss the deadline for the third year, this time, reportedly, by a month. That is not good government. Congress also ignores its legal obligations to account for the public's money. In 2022, when Democrats controlled the House and the Senate, neither budget committee bothered to draft a budget resolution, meant to frame Congress's vision of revenue and spending. In the end, a few legislators vanished into the room where these things happen and emerged with a 4,155-page, $1.7trn "omnibus" bill. Congress slammed it through and President Biden signed it just in time to avert another government shutdown.

It may be cause for hope that the two periods of seriousness about budgeting in the past 30 years occurred when a Democratic president faced a Republican House: under Mr Obama and under Bill Clinton. Lexington, dewy-eyed, was at the White House in 1998 when Mr Clinton announced the budget would soon balance, for the first time since 1969. His aides forecast "surpluses as far as the eye can see".

Throwing away their shot

It is hard not to mourn the America that might have been, had George W. Bush chosen to raise taxes amid the solidarity after the attacks of 9/11 rather than cut taxes while going to war in Iraq. Then came the global financial crisis and the even more feckless Trump tax cuts, followed by the covid crisis.

Both parties have learned that, by luxuriating in polarisation, they can ignore that governing requires trust and compromise. Republicans can have their tax cuts, Democrats can have their spending, and they can blame each other for the debt. "We have all lost the view that the budget is the starting point of what government does," says Maya MacGuineas, who wages a lonely fight from the Committee for a Responsible Federal Budget, a non-profit. "It's about confronting trade-offs."

As Hamilton told Congress, "States, like individuals, who observe their engagements, are respected and trusted: while the reverse is the fate of those, who pursue an opposite conduct." Whether or not extremists or bumblers breach the debt ceiling this time, America's lawmakers are not heeding his warning. ■

Peru

A country tearing itself apart

LIMA

Can democracy survive two months of often violent conflict?

For the past few weeks the cry of "Dina *asesina*! Dina *asesina*!" has rung out across the streets of several of Peru's bigger towns and cities. It is unfortunate for the country's president that her first name rhymes with the Spanish word for "murderer". Dina Boluarte is the legal, constitutional head of state. But since she took over on December 7th at least 58 people have died during protests, 46 of them civilians in clashes with the security forces, according to the ombudsman's office. Her name has become toxic, and for many Peruvians her government has lost any legitimacy.

Peru is suffering an explosion of street conflict of the kind seen in Chile in 2019, in Colombia in 2021 and in Ecuador last year. Peru's has been especially violent, seditious and dangerous. It also has a racial edge: the country's indigenous population has long been disadvantaged and has been at the forefront of the protests. At stake is whether democracy can survive. The society has become so polarised that some Peruvians talk of an impending civil war, far-fetched though that seems.

At least ten people have died as a result of the protesters' actions in blocking roads. Scores of highways, especially in the southern highlands, remain blocked and some big mines and the tourist railway to the Incan citadel of Machu Picchu closed. Several airports were out of action for much of January. Food, petrol and oxygen for hospitals are running short in some towns. Intimidation of travellers and businesses that defy roadblocks and orders to stop work is widespread.

According to the economy ministry, the conflict had cost around $625m (0.3% of GDP) in lost production by late January, besides the damage to infrastructure, factories and farms. Central Lima is ghostly behind protective fencing erected by the police, the trinket shops empty of tourists. Almost every evening demonstrators try to reach the Congress building. Groups of youths wielding sharpened staves, stones, slingshots and Molotov cocktails attack the police. On January 28th a demonstrator was killed, the first fatality in the capital.

The conflict was triggered on December 7th, when Pedro Castillo, a left-wing president narrowly elected in 2021, ordered the closure of Congress and the takeover of the judiciary. This failed and Mr Castillo was arrested. It echoed a more successful "self-coup" in 1992 by Alberto Fujimori, who governed Peru as an elected autocrat until 2000. For that reason, many on the left, as well as Mr Castillo's conservative opponents, initially denounced it. Congress voted swiftly to remove him by 101 votes to six with ten abstentions, and appointed Ms Boluarte, his elected vice-president.

But Mr Castillo and his supporters swiftly broadcast an alternative narrative in which the perpetrator of a coup became its victim. A leader of a teachers' union and of indigenous heritage, as president he misgoverned, naming more than 70 different ministers, few of whom survived more than a few weeks. According to prosecutors, he and his circle were corrupt, though he denies that. He placed many ill-qualified far-left activists in state jobs. His defenders argue that the right and the Lima elite never let him govern. His opponents claimed, without evidence, that he had won fraudulently, and at once set about trying to impeach him.

He retained the support of around 30% of Peruvians, mainly in the Andes, who identify with him. "He was useless, corrupt, whatever you like, but he was one of them," says Carolina Trivelli, a former so-

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cial-affairs minister. Now, according to Alfredo Torres, a pollster, around half of Peru's people—and two-thirds in the Andes—believe his false claim of victimhood and think that Ms Boluarte is a usurper who has allied with the right-wing.

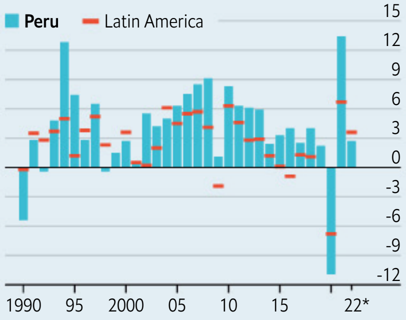
The protesters want Ms Boluarte to resign, the closure of Congress and an immediate general election. An election this year may indeed be the only way to restore calm. But they also want a Constituent Assembly to write a new constitution. And they want Mr Castillo to be freed, although that demand is fading. Much of this is hugely popular. In a poll published on January 29th by the Instituto de Estudios Peruanos, a research institute, almost 90% of respondents disapproved of Congress and 74% wanted Ms Boluarte to resign. These demands both reflect and hasten the collapse of the political system in a country that for much of this century seemed a Latin American success story.

In the 1980s, as today, Peru reached an impasse. It suffered hyperinflation, an economic slump and the terrorist insurgency of Sendero Luminoso (Shining Path), a fundamentalist Maoist outfit founded in Ayacucho, a town in the Andes. In the eyes of many, Mr Fujimori rescued the country. His authoritarian government quashed the terrorists. His free-market policies, reflected in a new constitution in 1993, unleashed more than two decades of rapid economic growth. Income per person rose at an annual average rate of 3% between 1990 and 2013, compared with a Latin American average of 1.7%. Whereas around 55% of Peruvians were officially poor in 1992, by 2014 that share had fallen to 23%, the fastest reduction in the region.

But Mr Fujimori, who is serving a jail sentence for human-rights abuses in the same prison where Mr Castillo is held, also planted some of the seeds of the current malaise. His regime practised bribery and corruption to get its way. He had no time for political parties. And in some ways he weakened the state. Economic growth and free-market policies continued under democratic governments since 2000. But corruption flourished and the political system decayed.

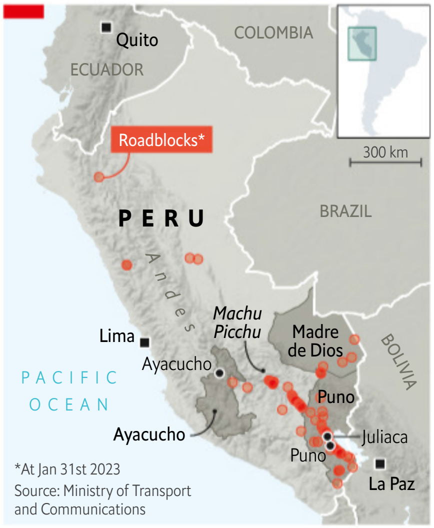
From over to under

GDP, % change on a year earlier



Source: ECLAC

*Estimate



*At Jan 31st 2023

Source: Ministry of Transport and Communications

Growth was not accompanied by institutional development. Three-quarters of the workforce labours in the informal economy of unregistered businesses. In recent years, unlawful economic activity has expanded. According to Carlos Basombrío, a former interior minister, up to 200,000 people work as illegal miners, mainly of gold and copper. Illicit businesses, including mining and drug-trafficking, generate at least $7bn a year, he reckons. Others put the figure much higher.

Political instability has intensified. Ms Boluarte is the sixth president since 2016. None has had a legislative majority. Six of the nine presidents since 2001 have been accused of corruption. The party system has fractured: the 130 members of Congress are divided among a dozen parties. Many of these are run as businesses by the holders of their legal registration. For many Peruvians the state is a tenuous presence. With such a large informal economy, "the role of parties becomes irrelevant," says Carlos Meléndez, a political scientist.

The protests "express structural fatigue with politics and the lack of responses of the state" to the population's problems, says Raúl Molina, an adviser to Ms Boluarte. This fatigue is especially acute among the mainly indigenous population of the rural southern Andes. The pandemic, too, heightened economic stress among poorer Peruvians. The poverty rate rose to 30% in 2020 and was 26% in 2021.

Since December, spontaneous anger has increasingly given way to organised, co-ordinated action by a range of forces of questionable democratic pedigree. These start with the parties of the Marxist left which backed Mr Castillo and have ties to Cuba and Venezuela. They also include the remnants of the Shining Path, which has reorganised itself as a far-left party, controls a teachers' union and has a particular presence in Ayacucho and Puno. Co-ordinated attempts to seize airports in the south smack of the Shining Path, according to Mr Basombrío.

The Aymara population in southern Puno shares cultural ties with the people of the Bolivian altiplano. Aides to Evo Morales, a former Bolivian president of Aymara descent, have been active in southern Peru. Then there are illegal miners, who appear to be behind roadblocks in several areas, including Madre de Dios in the Amazon. Officials say that common criminals may be behind arson attacks on 15 courthouses, 26 offices of the prosecution service and 47 police stations.

The protesters "want to generate chaos and disorder and use that chaos and disorder to take power," Ms Boluarte said on January 19th. That ambition does indeed seem to be behind the idea of a Constituent Assembly, a device used by Mr Morales and by Hugo Chávez in Venezuela to secure absolute power, with until recently few supporters in Peru. Now polls show that around 70% like the idea, perhaps because Congress is so hated. A referendum on a Constituent Assembly would be "very dangerous", according to Luis Miguel Castilla, the economy minister in a centre-left government from 2011 to 2014. The economy recovered from the pandemic despite Mr Castillo, because the constitution "imposes a lot of padlocks", he says.

Self-inflicted wounds

Protest is fanned by the blunders of Ms Boluarte and a self-serving Congress. The first deaths were at the hands of the army and police when protests began in December. Anger flared again after 18 died in Juliaca where a vastly outnumbered police detachment apparently panicked. Perhaps the government's biggest mistake was not to order a swift independent investigation into the deaths.

Ms Boluarte is from the highlands and unlike Mr Castillo speaks Quechua, the main indigenous language. She was a mid-level civil servant and is a political neophyte. She has appointed some competent ministers but in other ways has blundered. "The government is losing the communications battle," says Mr Castilla. "The issue has become government excesses."

An early election seems the only way out. But Congress, whose members enjoy lavish salaries and perks, has stalled and the government was slow to press for one. The constitutional amendment needed for an election must be approved on first reading by February 14th. Fail to take this chance and "Peru will become pandemonium," says an official. But the left insists on linking the election to a Constituent Assembly. The right wants an election next year. They are fiddling while Peru burns. ■

Paraguay

Smokes and fire

ASUNCIÓN

The United States says official corruption starts at the top

Corruption is nothing new in Paraguay. But the scale of the backlash from the United States it has provoked may be. At a press conference in his embassy in Asunción on January 26th, Marc Ostfield, the US ambassador, unveiled harsh new sanctions on the two most powerful figures in the ruling Colorado Party. Horacio Cartes, the country's president from 2013 to 2018, and Hugo Velázquez, the current vice-president, are accused of "rampant corruption" and ties to terrorists.

Mr Cartes, a rich businessman, is accused of having paid party members as much as $10,000 to back his presidential candidacy. He also allegedly greased legislators' palms with up to $50,000 a month and promised to split $1m between them if they amended the constitution to allow his re-election. For more than a decade, the Biden administration argues, Mr Cartes has "leveraged his illicitly acquired wealth and influence to expand his political and economic power over Paraguayan institutions." Mr Velázquez is accused of making threats and offering bribes to "protect himself and criminal associates". Both men deny all the allegations.

America also accuses the two of sending representatives to collect bribes in exchange for state contracts and favours at events in Paraguay staged by Hizbullah, a Lebanese Islamic militant group that is backed by Iran and designated a terrorist organisation by the United States. The two are now blocked from doing business with American citizens and banks. Earlier sanctions already barred them and their families from American soil.

There was a time when the United States was kinder to Paraguay's rulers. As dictator from 1954 to 1989, Alfredo Stroessner bought the loyalty of his generals and the Colorado Party by allowing the smuggling of whisky, cars and cocaine into Brazil. But at least until 1977, America trained Paraguayan soldiers, provided guns and helicopters, and helped the country secure multilateral loans and aid.

The world has changed, and Paraguayan graft has worsened. In South America, only in Venezuela are perceptions of official corruption more acute, according to Transparency International, an NGO. This is bad for Paraguay's 7m people, and matters far beyond its borders. Drug gangs as well as Hizbullah and other groups increasingly use the country as a staging-post. It is South America's leading marijuana producer and an important pipeline for Andean cocaine. Record hauls of it are being found stashed in shipments of Paraguayan paint, rice and soyabeans. Journalists, officials and bystanders are murdered with alarming frequency.

Mr Cartes has 30 businesses—television stations, hotels, ranches, banks, pharmacies and supermarkets. The jewel in his crown is Tabesa, a maker of cigarettes. Millions of packs are smuggled abroad every year, especially from Ciudad del Este in the triborder area near Argentina and Brazil. They are reportedly sold by a gallery of rogues: FARC guerrillas in Colombia, the Sinaloa cartel in Mexico, and the PCC, a ruthless Brazilian narco-multinational.

Cartes looks beyond the sanctions

Mr Cartes's people insist that Tabesa's sales are "100% legal". They point out that the company is Paraguay's biggest taxpayer and has never been charged with smuggling—a phenomenon they blame on higher foreign duties on cigarettes. The American allegations, they claim, were "orchestrated" by the current president, Mario Abdo Benítez, a rival to Mr Cartes in the Colorado Party. America, they allege, hopes to swing the presidential election due in April in favour of Mr Cartes's enemies. They argue that no Paraguayan enjoys a warmer relationship with Israel—Hizbullah's sworn enemy—than Mr Cartes. As for Mr Velázquez—a former prosecutor in Ciudad del Este—his lawyer says the allegations are "completely false" and that "no one has done more for the fight against organised criminality in Paraguay."

A stream of allegations

In recent years, judges, navy officials, congressmen, prison guards, policemen, cabinet ministers and health officials have all been implicated in breathtaking corruption schemes, mostly escaping serious punishment. Of late, the sleaze has taken on a scarier edge. Kattya González, an opposition congresswoman, says many of her fellow legislators are bankrolled by gangsters. She has called some out to their faces, and posts clips online. Her videos have been viewed 42m times.

This is dangerous. In the past year alone hitmen, probably in the pay of drug gangs like the PCC, have murdered a local mayor, a radio journalist, a former prison director and a prosecutor. Ms González and her family have received death threats. "We're a quasi-narcostate," she frets.

Washington's sanctions are unlikely to hurt the ultraconservative Colorados—in power for all but five years since 1947—at the ballot box. Paraguayans grumble about venal politicians, but most have more pressing priorities. One in four lives in poverty; two-thirds hold informal jobs. Drought probably nudged the economy into recession in 2022. Equivalent to 13.9% of GDP, the government's tax take is South America's lowest; cancer hospitals have no medicines. Desperate, citizens are forced to rely on the Colorado Party's embrace.

Mr Cartes, for all his unpopularity in Washington, looks safe enough. In December the Colorado Party held internal elections. Mr Cartes was voted its leader in a landslide, and the party chose Santiago Peña, a former finance minister and his chosen candidate, to contest the presidential election in April. Against a divided opposition, also tainted by (less serious) corruption allegations, he is favourite to win. ■

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Nigeria

The amazing race

YOLA AND KANO

Three candidates have real hopes of victory

If presidential elections were won by advertising, Bola Tinubu of the incumbent All Progressives Congress (APC) party would win Nigeria's by a landslide. His face grins relentlessly over all corners of the country (pictured). "Posters don't vote," quips a member of the campaign team for Peter Obi, the candidate of a rival minor party who unexpectedly leads the polls in what is usually a two-horse race.

The contest is close, chaotic and crucial to the future of Africa's most populous country and biggest economy. Nigerians, who will vote on February 25th, are poorer today than eight years ago. Much of the blame falls on the outgoing president, Muhammadu Buhari, who has governed badly during his eight years in office. Fully 89% of Nigerians think the country is heading in the wrong direction, according to Afrobarometer, a pollster. On his watch the economy has stagnated and violence has spread: last year at least 10,000 people were killed by criminal gangs, terrorists or the army. A country that once exported security through peacekeeping missions now exports trouble, destabilising neighbours.

Yet for all its travails, Nigeria is also Africa's biggest democracy—with an opportunity for renewal. That matters in a country that has gone through five coups. The use of modern voting technology will make it harder to rig the results. More Nigerians are likely to vote than ever before. There is an "unprecedented awakening" among the young, who make up 40% of registered voters, says Opeyemi Oriniowo of the Nigeria Youth Futures Fund, an NGO based in Lagos, the commercial capital. These are telling signals in a continent where democracy is in retreat. Should an opposition party win, this would be only the second time since the generals returned to barracks in 1999 that voters have ejected an incumbent party by the ballot.

Three hopefuls seem to have a shot at victory. To secure it they have to gain not only the most votes nationally, but also win at least 25% of the vote in two-thirds of Nigeria's 36 states and federal capital. If no candidate clears that bar, there will be an unprecedented run-off.

What will decide who wins? Despite the huge challenges facing Nigeria, it will not be policy proposals. Little distinguishes the candidates on the key issues; other factors come into play. Power-brokers often deliver blocks of votes by fair means or foul. "Whoever the camp leaders say, that is who we will vote for," says Falmata Abdulrahman as she breastfeeds her daughter in a camp for displaced people in the north-east. Intimidation and vote-buying are common. "We were at the mercy of hoodlums and thugs," says Ahmadu Duste, who worked at a polling station in the last election. "I saw voters being given cash."

The 70-year-old Mr Tinubu has the clearest path to victory because he has deep pockets and his APC controls 21 of Nigeria's 36 governorships. He expects to win

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handsomely in the south-west, his regional stronghold. He is hoping that his Muslim faith and that of his running-mate, Kashim Shettima, a former governor of the north-eastern state of Borno, will help him in the mostly Muslim north. Yet given the violence, fuel shortages and economic malaise in Nigeria, many voters may be wary of backing the incumbent party. Many also worry about Mr Tinubu's health, since he looks increasingly frail and has had to skip several big campaign events.

And some may question his character. Last year he settled a lawsuit in which he was accused of secretly owning 70% of a private company that was given a contract to collect taxes on behalf of Lagos state during his time as its governor (1999-2007). Court papers alleged that it earned a commission of 10% of all revenues it collected there. Mr Tinubu denies any wrongdoing.

Some voters also question the probity of the main opposition's candidate, 76-year-old Atiku Abubakar of the People's Democratic Party (PDP), a wealthy former customs official and vice-president. In 2010 a Senate committee in America said he was implicated in the transfer of over $40m of "suspect funds" to that country. He too denies wrongdoing.

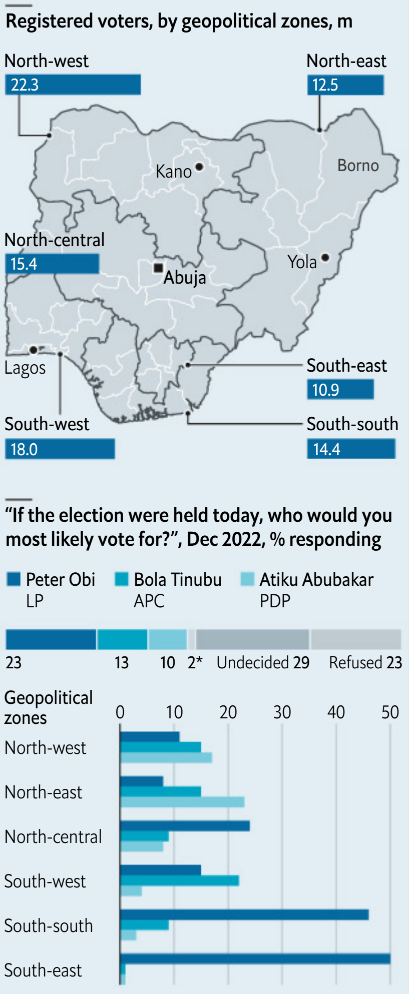
Across much of Nigeria, religious leaders—Christian and Muslim—are pushing people to vote for their co-religionists. That may set an imposing hurdle for Mr Abubakar. He is a northerner and a Muslim representing a party that in recent years has found support mainly in the Christian south. This time Mr Obi, a Christian who is backed by neither of the two dominant parties of yore, will eat into much of that support. "My pastor encourages us to vote for him," says Lydia Adamu, a churchgoer. Mr Abubakar is struggling to rally even his own party. Five PDP governors have withheld their endorsements and seem set to back his southern rivals. And in the north he will probably lose votes to Rabiu Kwankwaso, a popular former governor who is also running for the top job.

Mr Obi, a 61-year-old former governor and trader, owes his popularity in part to citizens' desperation for an alternative to Nigeria's venal, ego-laden politicians. Many voters are attracted by his frugal, energetic style and see him as more honest than his rivals. Kayode Fayemi, a former APC governor advising Mr Tinubu's campaign, concedes that Mr Obi will probably take 80% to 90% of the vote in the south-east, his home region. Rivals deride his young fans as keyboard warriors who are not registered to vote. Yet as supporters hung off nearby balconies at a recent rally, Mr Obi cried, "If you have your PVC [voter card], raise your hand." A forest of arms rose to the sky.

Still, Mr Obi's path to victory is a narrow one. Election officials are accused of dragging their heels in registering new voters, particularly in his stronghold, which has fewer voters on the books than other regions (see map). And his weakness in northern states means he may struggle to clear the 25% bar. His best hope is that urbanites turn out in such large numbers that the election goes to a run-off.

People and power

Nigeria, presidential election, February 25th 2023



Sources: INEC; ANAP Foundation *Rabiu Kwankwaso (NNPP)

The poll seems unlikely to be completely free, fair and peaceful, but it should still deliver a legitimate result. Election offices have been repeatedly attacked. Polling booths will be largely absent from areas infested with jihadists. Losers may stir up violence. More worryingly, some talk of a return to Nigeria's dark past of coups, among them Mr Fayemi. Some powerful Nigerians "want to pre-empt the people", he says, because they "feel that none of the candidates in the running now would be good for the country." Thankfully, a putsch would be hard to pull off. Whatever the failings of the contenders, a return to military rule would be worse for Nigeria. ■

Congo's crisis

In it to win it?

NAIROBI

Kenyan troops are struggling to stop eastern Congo sliding into mayhem

FOR PEOPLE living in the east of the Democratic Republic of Congo, foreign soldiers generally come in two types, the larcenous and the feckless. Neighbouring armies have mostly been responsible for the larceny, periodically plundering eastern Congo's vast mineral riches ever since Rwanda and Uganda first invaded in 1996. By contrast, the fecklessness has worn a blue helmet: the UN mission in Congo, one of the most expensive ever mounted, has proved singularly ineffective at stanching the anarchy that has forced 5m people from their homes and is impoverishing a region of more than 100m people.

Many Congolese cheered when the East African Community (EAC), a regional economic bloc, announced plans in June to deploy an intervention force. True, Uganda and Burundi, both past invaders with less-than-cuddly reputations, are contributing men. But Kenya, untainted by such grubbiness, was to lead the force. Here, at last, was an honest broker with sufficient diplomatic and economic heft to make a difference, with a genuine belief that stability will make the region richer. Better still, the force had a robust mandate to "contain, defeat and eradicate negative forces". With eastern Congo facing its gravest crisis in a decade, a Kenyan show of leadership could not have been more timely.

Pride rose across the region, too. Even South Sudan, penurious, war-ravaged and more used to hosting peacekeepers than deploying its own, chipped in a battalion. Salva Kiir, its president, beamed with pride as he waved his men off on December 28th. "Don't go engaging in the raping of women and girls," he said. "Don't take anything from shops and civilians."

Alas, it has not taken long for the mood to sour. On January 18th police in Goma, the main city in Congo's east, dispersed a demonstration called to denounce the perceived inaction of Kenyan troops since they arrived there two months ago. True, the protest was small—but anti-EAC sentiment is undoubtedly growing.

Goma's 1m residents are understandably twitchy. In November 2021 a powerful rebel outfit, known as M23, re-emerged from its hideouts and embarked on a blood-soaking offensive. A leaked UN report alleges that Rwanda has armed it with sophisticated weapons and fought alongside it at pivotal moments.

At a summit in Angola last November,

regional powers demanded that the rebels withdraw from all territory seized since the start of the offensive. Kenya's contingent was meant to move in as M23 pulled back. The rebels, however, have called their bluff. Far from withdrawing, they have expanded their operations. On January 27th they seized the strategic town of Kitshanga, severing another road artery into Goma, which is now at serious risk of encirclement. Through all of this, the EAC force has failed to fire even a single shot.

There are good reasons for Kenya to avoid a fight with M23. The deployment of the regional force was more about giving weight to diplomatic pressure on Rwanda than becoming involved in the fighting. Clashing with the rebels would risk a conflict with Rwanda. Yet by raising expectations and doing nothing, Kenya is squandering goodwill and emboldening the rebels, who seem to have little to lose from continuing their offensive. ■

South Africa

Old birds and power cuts

JOHANNESBURG

Blackouts are hurting the economy in unexpected ways

"WE SLAUGHTER CHICKENS 24 hours a day," says Izaak Breitenbach of the South African Poultry Association (SAPA), an industry body. At least that is the plan. Normally 4m birds are sent to abattoirs every day. But power cuts implemented by Eskom, the state-owned utility, have been "an absolute disaster", he says, causing butcheries to cease butchering. The curious yet potent effects on this one industry hint at the vast cost of blackouts for the rest of the country's economy.

The question of what came first, the chicken or the egg, is irrelevant for poultry producers; all they see is one long value chain. They raise parent chickens, whose eggs are taken to hatcheries. The hatched chicks are moved to broiler farms, the cacophonous prelude to the abattoir. Chickens are typically slaughtered at a precise, young age—34 days old—to meet buyers' requirements. Fast-food restaurants such as KFC have tightly controlled processes: if wings or legs or breasts are too big, then the allotted cooking time is insufficient and the meat is raw. South African consumers are generally too poor to afford large birds, so retailers also encourage producers to slaughter birds earlier than happens in richer countries.

Last year the total amount of "load-shedding", as the local euphemism goes, was more than twice as high as in any previous year. In 2023 there is literally no light at the end of the tunnel. South Africans expect to be without electricity for six to ten hours a day. That means a quarter fewer chickens are being slaughtered, with two direct effects. First, farmers breed fewer chicks, since there is no space at broiler farms. Second, the 1m or so poults that are spared every day are growing bigger. They are too big, in fact, for the likes of KFC, meaning lost sales for chicken firms.

Power cuts mean higher prices, too. In part this is because of reduced supply. But it is also a result of higher costs. One farmer says that he spends 800,000 rand ($47,000) a day on fuel for his generators.

Poultry is just one sector hurt by load-shedding. Mining output has fallen year-on-year for ten consecutive months. The small businesses that serve millions of consumers in poor, mostly black townships are going bust. Shoprite, a large grocery chain, forecast that if power cuts continue, it will spend 1.2bn rand a year on diesel to keep the lights on, a sum equal to about a fifth of its annual profits. Economists reckon power cuts may tip the country into recession in 2023.

There are other unexpected consequences, too. In parts of Johannesburg taps have run dry because the water utility is unable to pump without power. And with traffic lights going dark, motorists are regularly stuck in jams on gridlocked roads.

Cyril Ramaphosa, the president, is considering declaring a national state of disaster over the power crisis. But South Africans have lost faith in the ruling African National Congress's ability to fix Eskom, which has suffered years of graft, crime, mismanagement and a failure to maintain coal plants. So long as politicians behave like headless chickens, there will be fewer of the real sort. ■

Lights on the blink again, love? Yes, hen

Lebanon's travails

Courting disaster

DUBAI

Lebanon's judges are at war over their probe of a catastrophe

"JUDGE NOT, lest ye be judged." Lebanon's top prosecutor seems to have taken the biblical commandment to heart. For years he has stalled probes into the country's financial crisis, among the worst in modern history. Now he wants to sabotage the investigation of the catastrophic explosion in 2020 at Beirut's port, setting off a judicial feud some fear could turn violent.

Tarek Bitar, the judge overseeing the port probe, had been unable to do his work for more than a year. Officials and MPs he wanted to interrogate filed dozens of lawsuits arguing that he had no authority to do so. Some of their arguments were frivolous—but the court that should have heard their claims lacked a quorum to convene.

The pending lawsuits halted the inquiry until January 23rd, when Mr Bitar unexpectedly resumed it and issued new summonses for senior officials, including Ghassan Oueidat, the chief prosecutor. Mr Oueidat accused him of overstepping his powers, then released all the detainees held over the blast, slapped Mr Bitar with a travel ban and charged him with judicial misconduct (that case, too, will be stalled by the absence of a quorum).

It is a farce, but not a funny one. The explosion, caused by thousands of tonnes of ammonium nitrate stored improperly at the port, killed more than 200 people and wrecked much of the city centre. There is plenty of blame to go around: dozens of Lebanese officials knew the chemicals posed a danger but failed to remove them. Families of the victims continue to hold regular protests for justice, but few Lebanese expect they will get it.

Hizbullah and Amal, two Shia political parties, have been Mr Bitar's staunchest opponents. They have threatened him in the past and accuse him of running a politically motivated witch-hunt; more likely, they have something to hide.

Both have lots of armed supporters. So does Samir Geagea, the head of a right-wing Christian party who supports Mr Bitar. The fear is that the furore over the port investigation could lead to violence. A protest in October 2021 against the judge, sponsored by Hizbullah and Amal, turned into a shoot-out, the worst such incident in Beirut in more than a decade.

While the judges joust, the currency collapses. Once pegged at 1,500 to the dollar, the Lebanese pound has lost 97% of its value. It dropped through 50,000 on the parallel market in mid-January and then 60,000 days later. Average inflation in 2022 was 171%, up from 155% a year earlier. The pound is so volatile that prices for bread, fuel and medicine are adjusted daily. Many businesses are no longer accepting credit cards so shoppers must carry around bricks of cash.

Lebanon reached a provisional agreement worth $3bn with the IMF in April, but it has yet to be finalised. The fund has long pushed Lebanon to unify its exchange rates and recognise the scale of losses in its financial sector. On February 1st Riad Salameh, the central-bank governor, at last devalued the currency. Banks will now use a rate of 15,000 on their balance-sheets, an arbitrary figure that he seems to have reached simply by adding a zero to the old one. The change is unlikely to garner much praise from the IMF.

Mr Salameh may have other things on his mind: he is being investigated in no fewer than six European countries. In January a team of European investigators landed in Beirut to scrutinise his finances. They suspect he and his brother, Raja, embezzled money from the central bank and used some of the profits to buy property in Europe. (The brothers have not been charged and deny any wrongdoing.)

Yet he continues to run the central bank, as he has since 1993. His latest term should end in July. Replacing him would require a deal among Lebanon's factious politicians, who cannot agree on much.

Michel Aoun, the president, left office on October 30th at the end of his six-year term. Parliament has held 11 sessions to pick a replacement; none has produced a winner. These, too, have been nonsensical. Many MPs have cast blank ballots. A few chose historical figures like Nelson Mandela and Salvador Allende. Given the state of Lebanon's governance, a dead president may not be worse than the alternatives. ■

Israel's politics

Don't be evil

JERUSALEM

Israel's government faces anger from new and unexpected quarters

Despite wars, political instability and global financial turmoil, Israel's economy has been a steady success. Bar a blip in 2020, it has grown by almost 4% a year since 1996. Binyamin Netanyahu, the country's longest-serving prime minister, has been in charge for much of this. He likes to take credit for the boom. Israel's business bosses have allowed him to do so.

No longer. His new government's plans to overhaul Israel's legal system, eroding the Supreme Court's independence and limiting its power to hold the executive to account, have prompted ire from his more predictable foes, including his political opponents and the judiciary. Now the country's economists and business leaders are chiming in too, warning that he may endanger the country's prosperity.

In an open letter to Mr Netanyahu, two former central-bank governors told him that by weakening the court's independence he risks making Israel less attractive to foreign investors, driving down its credit ratings. "There is a correlation between processes which seem unconnected, like the judiciary's ability to review the government, and trust in the economy, which affects economic performance," they argued. The prime minister's proposals, they cautioned, could damage Israel's economy. Their warnings were echoed by another letter from 370 Israeli economists.

Similar missives have been sent by business leaders and investors in the tech sector, which in 2021 accounted for 54% of Israel's exports of goods and services. On January 24th around 1,000 tech workers at various firms in a number of towns held their first-ever strike in protest against the proposals. They walked out carrying signs saying "No Democracy—No High-Tech".

Some tech entrepreneurs have gone further, announcing that they are transferring their funds abroad. For an industry that fought for decades to bring foreign investment into Israel and took pride in keeping its research centres there, even when fledgling firms were bought up by foreign companies, this is unprecedented.

"The Israeli high-tech sector has been seen as a role model of professionalism by investors and startups," says Fiona Darmon, a venture capitalist in Jerusalem. "A professional and independent legal system is a bedrock for this."

The techies' concerns are not just financial. They reflect the ideological and social rifts within Israel that are behind the protests against the government. People in the tech sector hail overwhelmingly from Israel's middle class, which is mainly secular. Backers of Mr Netanyahu's coalition tend to be more religious and working-class.

The government is not only trying to weaken the liberal-leaning Supreme Court. It also wants to increase funding for lifelong rabbinical scholars and for religious schools that refuse to teach subjects such as maths and English. At the same time it proposes to slash projects beloved by secular Israelis, such as the public broadcasting corporation. "It feels like a government that is trying to do everything in its power to walk all over Israelis who work and pay the most taxes," says one tech executive.

So far Mr Netanyahu shows no sign of dropping his plans. His government's stability relies on the support of his far-right political partners. Meanwhile, the prime minister, who is facing charges of bribery and fraud (allegations he strenuously denies), has his own reasons for opposing Israel's legal establishment.

But the latest accusations—that he is imperilling Israel's economic success—

Moving fast and breaking things

now preoccupy him. In recent weeks violence in the Israeli-occupied West Bank has soared. Dozens of Palestinians have been killed there by Israeli security forces. On January 27th a Palestinian gunman killed seven Israelis in Jerusalem. Yet despite such horrors Mr Netanyahu has stepped up a social-media campaign to focus on the economy.

Mr Netanyahu once again told business leaders in Tel Aviv that his policies were the source of Israel's economic success and a guarantee of future growth. His political rivals were running a "scare campaign" to deter investors, he said. Thousands of investors were staying away from Israel because of "legal interference", he insisted. His reforms were designed only to help boost Israel's economy.

So far there are few signs that it is foundering. It grew by more than 6% in 2022. Whether Mr Netanyahu's plans will slow it down remains to be seen. ■

Algeria and Morocco

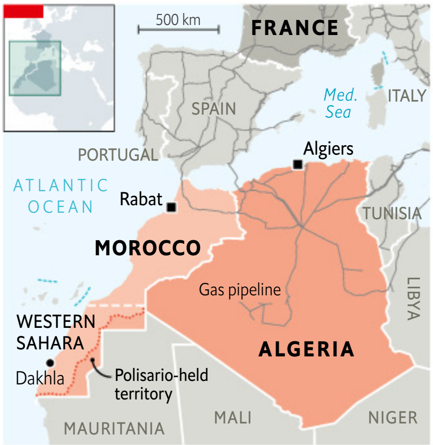
Switching sides

France dumps Morocco as it cosies up to its old antagonist, Algeria

How the tables have turned. Just over a year ago, France's president, Emmanuel Macron, dismissed Algeria, France's troubled former colony, as a spent regime and cut the number of visas issued to its citizens. Algeria huffily recalled its ambassador and banned France's air force from its skies. Since then, however, France has eagerly sought a rapprochement. On January 23rd Mr Macron hosted General Saïd Chengriha, Algeria's top general, the most powerful man in the land. A large French delegation followed him back to Algeria. There is "an exceptional dynamic", says a diplomat who helped organise it.

As France's relations with Algeria blossom, those with Morocco, its erstwhile protégé and a bitter opponent of Algeria, may be wilting. Mr Macron last visited Morocco in 2018 and has since made a trip to Algeria. Morocco's king, Mohammed VI, spent at least four months in Paris last year but never met France's president.

On January 19th Mr Macron's party, Renaissance, helped push through a resolution in the European Parliament that condemns Morocco's human-rights abuses without a simultaneous swipe at Algeria, whose record is at least as dismal. "The Moroccans thought that they were running circles around Algeria in Europe and the US," says Geoff Porter, an American expert on Algeria. "All of a sudden, Algeria is more important and less problematic."



In light of the war in Ukraine, the abundance of gas in Algeria is the prime cause of the rapprochement with France and Europe. Italy's prime minister, Giorgia Meloni, was recently in Algeria and Libya to discuss investments in energy. Italy now depends on Algeria for 40% of its gas, up from 30% before the Ukrainian war. The share of Russian gas in Italy fell from 40% to 10%. Morocco, by contrast, has almost no hydrocarbons to offer. Russia has for years been Algeria's prime supplier of weapons, so it was striking that General Chengriha discussed arms sales with French firms during his trip. To the delight of the Europeans, Algeria's president, Abdelmadjid Tebboune, has indefinitely suspended a planned visit to Moscow.

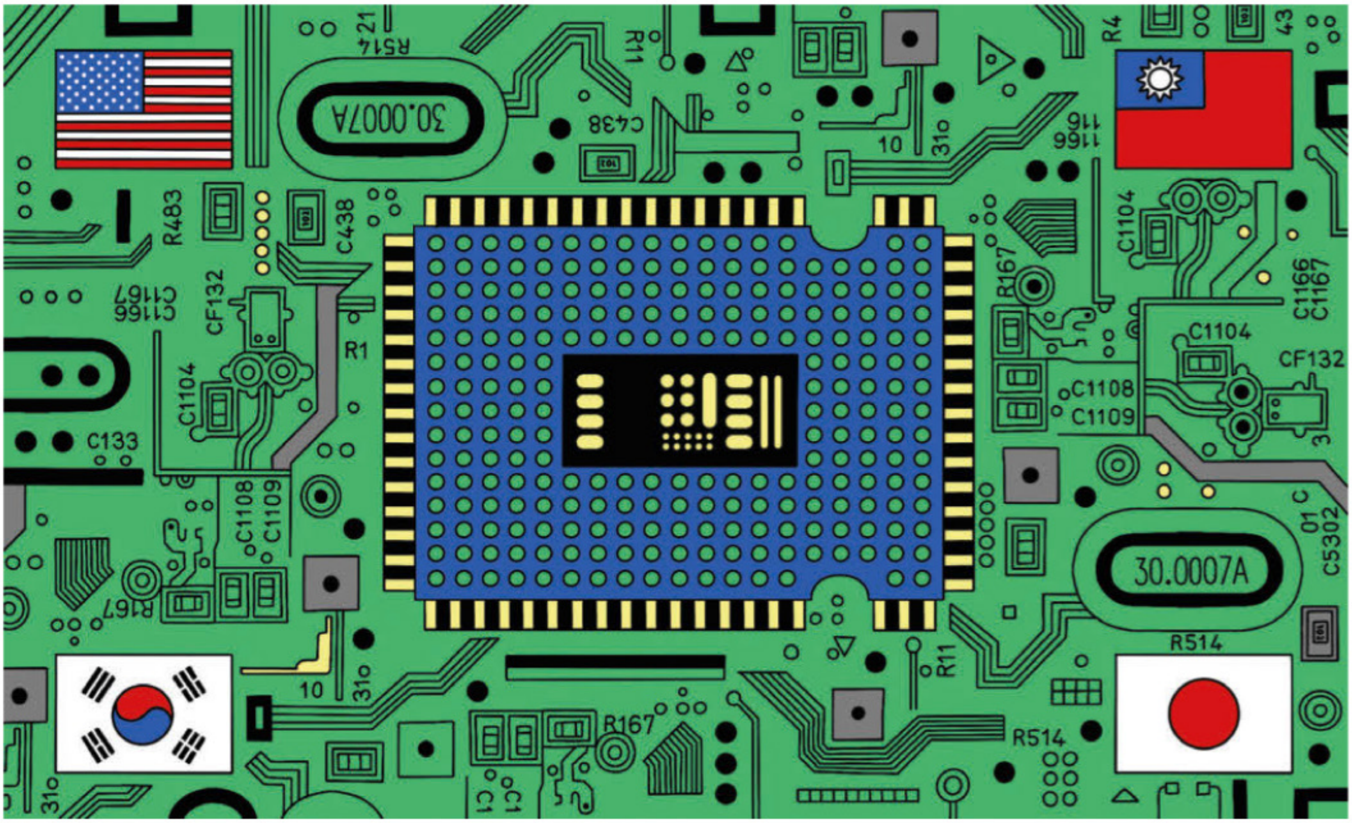
Morocco is partly to blame for its drop in France's esteem. King Mohammed is often absent and Morocco's foreign policy seems to drift. The country's relentless demand that Europe should accept its claim to sovereignty over the disputed territory of Western Sahara remains unmet. Its representatives were allegedly recently caught lobbying European MPs with bribes (Morocco has denied any part in a corruption scandal and has rejected allegations that it sought to influence the disputed status of Western Sahara). It has also been accused of using Israeli spyware to bug the phones of its one-time allies, including Mr Macron. In any case, Morocco seems to be turning its back on what it calls "old Europe". Instead, it is looking increasingly to Israel and America for its defence.

Morocco has been described by a seasoned observer in Rabat, the kingdom's capital, as "a jilted mistress fuming after her partner went back to his true love". After the European Parliament passed its resolution condemning Morocco for its human-rights record, the parliament in Rabat voted unanimously to review ties with its EU counterpart. Moroccan politicians castigate European ones, especially the French, for colonial meddling.

Meanwhile, Morocco's friendship with Israel is blooming. Israel's foreign minister, along with his peers from America and the United Arab Emirates, is expected to be hosted by Morocco to celebrate the second anniversary of the Abraham accords that have normalised relations with the Jewish state. The gathering is, tellingly, set to take place in Dakhla, a port in Western Sahara.

Meanwhile tension along the Algerian-Moroccan border is once again rising dangerously. Relations between the two, which last came to lethal blows in 1963, have long been sour. Morocco fears that Algeria may supply drones to Polisario, the movement that has long sought independence for Western Sahara. Algeria, for its part, fears that Israel may help Morocco plan a cyber-strike against its oilfields. When France drops a mistress for a new lover, sparks in the desert may fly. ■

Algérie, mon amour



Asian chipmakers

Silicon islands in the storm

KUMAMOTO, SEOUL, TAIPEI AND TOKYO

America's hoped-for Asian semiconductor pact faces steep odds

Cranes tower over a bustling construction site on the edge of Kumamoto, a midsized city on Japan's southern island of Kyushu. Motivational banners hang from its scaffolding: "Always smile". White fences line the perimeter, dividing the rising steel structures from nearby cabbage and carrot fields. There is little to suggest that this is one of Asia's most geopolitically significant building sites.

Yet there are clues to the project's importance. "JASM", the name of a Japanese subsidiary of TSMC, the Taiwanese semiconductor giant, is written on a wall of the construction site. Down the road stand nondescript complexes belonging to Sony and Tokyo Electron, two big Japanese semiconductor firms. In a couple of years, the new plant will begin churning out chips, primarily for use in cars. Japanese officials hope it will help jump-start the country's once-mighty, now flagging chip industry. Kabashima Ikuo, Kumamoto's governor, speaks of reviving Kyushu's reputation as a "Silicon Island".

TSMC's arrival in Kumamoto is one sign of broader shifts in the semiconductor business across Asia. Concern about Chinese aggression towards Taiwan, home of most of the world's advanced chip production, is reshaping supply chains. America is reinforcing that development by limiting China's access to advanced chips and enticing chip firms to set up shop on its shores. President Joe Biden's administration has called for a "Chip 4 alliance" of America, Japan, South Korea and Taiwan to co-ordinate chip policy. Yet America's allies in Asia are all pursuing their own self-interested chip strategies, which are just as often in tension with each other as they are symbiotic. "There are two sides of the coin: chip networks and chip wars," says Kuroda Tadahiro of the University of Tokyo.

The semiconductor industry is no stranger to geopolitical wrestling. By the 1980s Japan accounted for more than 50% of global semiconductor production. Wary of Japanese power, America rammed through a chip trade deal to the detriment of the Japanese industry. Competitors in South Korea and Taiwan rose, often with lots of support from their governments. Countries developed distinct chipmaking strengths (see chart on next page). These days, America specialises in design while Taiwan dominates production of the highest-end logic chips. South Korea focuses on memory chips. Japan has niches in optical sensors and the materials and kit needed to make semiconductors. China, which has poured money into its own chipmaking industry, has made most progress in lower-end logic chips.

America's Asian allies, in particular Japan and Taiwan, also worry about China getting technology that could give it a military edge. "China has become too strong, Western countries must collaborate and co-operate in technology," says Seki Yoshihiro, who heads a chip strategy group inside Japan's ruling Liberal Democratic Party. After much cajoling, Japan (and the Netherlands) reportedly signed on to America's export controls against China last week. Yet national interests are trickier ▸▸

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to align in economics than in hard security. "It's really difficult in economics to get a united front in areas like this," says Robert Ward of the Geo-economics and Strategy programme at IISS, a British think-tank.

America has offered big subsidies to its domestic chip industry: the CHIPS and Science Act passed late last year includes 25% tax credits for new semiconductor investments as well as some $50bn in additional public investment. Asian chip giants are joining the state-aid bandwagon too. "It's all the rage", quips Vinod Aggarwal of the University of California, Berkeley.

South Korea has passed support measures for its industry, in what is known colloquially as the "K-Chips Act". The amounts on offer are piddling so far: an 8% tax credit for large firms' investments in domestic facilities. But pressure to keep up with the Joneses is rising. Samsung and SK Hynix, the two biggest South Korean chip firms, are investing big in America. While that could make Korean firms more competitive, it could result in a "hollowing-out" of the South Korean semiconductor industry, says Lee Seung-joo of Chung-Ang University in Seoul. Perhaps with that in mind, Yoon Suk-yeol, the country's president, would like to hike the tax credit for big firms' investments to 15%, plus another 10% for extra investments made in 2023.

Similar dynamics are in play in Taiwan. An amended innovation law passed in January and nicknamed "Taiwan's chips act" offers domestic chip companies 25% of their research and development costs in tax credits. In TSMC, Taiwan holds the chipmaking prize everyone else aspires to attract or duplicate with subsidies. In addition to its Japanese fabrication plant, TSMC plans to build two plants in America. Though its foreign investments do not involve its most advanced technology, they are causing consternation at home. Many in Taiwan fear TSMC's sorties could reduce America's incentive to defend Taiwan from China. The firm is keen to assuage the anxiety. At a plush ceremony in December to mark the start of its mass production of advanced chips, TSMC's chairman noted that the firm had invested $60.7bn in a fab in southern Taiwan, about 50% more than it had in America.

Japan has also loosened its purse-strings. A supplementary budget package passed in late December features 1.3trn yen ($10bn) for chips, including funding for nearly half the cost of TSMC's plant in Kumamoto. TSMC is considering building a second plant in Japan; Tim Cook, the CEO of Apple, TSMC's biggest customer, paid a visit to Kumamoto late last year. The Japanese government has also provided 70bn yen in seed capital to Rapidus, a new joint venture between leading Japanese electronics companies that will collaborate with foreign giants such as America's IBM and Belgium's IMEC in the hopes of developing a base for R&D and production of leading-edge chips in Japan.

The vision of a "democratic semiconductor supply chain" is not implausible. But creating chip networks rather than fuelling chip wars will require careful co-ordination within individual governments, between allied governments and across public and private sectors. Taiwanese and South Korean chipmakers are locked in a fierce contest to produce next-generation chips. Differences over history poison relations between Japan and South Korea—and have spilled over into the chip trade in the past. None of the countries' bureaucrats are well-equipped to handle the complexity of semiconductor supply chains. The Chip 4 alliance itself reflects "limited thinking on this", argues Martijn Rasser, a former senior American official: "How can you have a real conversation about semiconductor supply chains without the Netherlands and probably Belgium?"

America's unilateral attacks on China have made it harder to foster a spirit of co-operation. The Biden administration's announcement of controls on chip exports to China last October caught many in Asia off-guard. "Oh, so you're doing this alone?" a senior Japanese official recalls thinking after he heard the news. Ahn Cheol-soo, a South Korean tech entrepreneur-cum-politician, likens America's approach to Marlon Brando's mafioso "offer you can't refuse" in "The Godfather". South Korea has yet to join the ban.

In part, Asian chipmakers worry about losing market share in China. Japanese semiconductor firms generate 20-30% of their business there, and stand to lose about 70% of it as a result of America's curbs, reckons Minamikawa Akira of Omdia, a research firm. Tokyo Electron cut its annual operating income forecast by nearly 25% following the new American restrictions. Both Samsung and SK Hynix have significant manufacturing and R&D facilities in China; between January and September of last year, about 40% of Korean chip exports went to China. There are also many ways China could make life difficult. Japan recalls a painful Chinese ban on exports of rare-earth metals occasioned by a row over the disputed Senkaku/Diaoyu islands in the early 2010s. China has explicitly warned South Korea not to join America's Chip 4 group.

When the chips are down

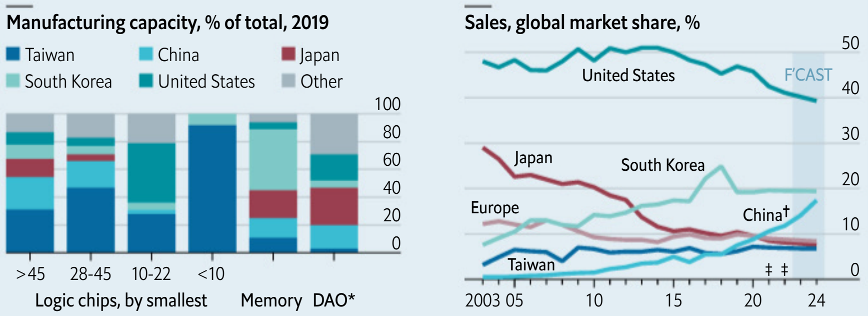
Other risks abound. Parallel industrial policies could produce a supply glut. Of executives surveyed by KPMG, a consultancy, 65% thought the supply shortage that hit some chips recently would ease in 2023. A profit warning from Intel, which once led the industry and on January 26th forecast one of its worst ever quarters, has intensified concerns about excess production.

A focus on fabrication ignores the tail ends of the supply chain, such as raw materials, packaging and testing, where South-East Asia and China play key roles. Many also fret that America's curbs on China's ambitions for high-end chips will only mean China focusing its resources on legacy chips. Its successes in flooding the market to corner the production of solar panels and rare earths are troubling precedents.

Even if governments prove willing to subsidise the inefficient construction of duplicate supply chains, they may not find enough engineers to work them, especially in demographically-challenged East Asia. South Korea's semiconductor industry is predicted to be short of at least 30,000 workers in the next decade. C.C. Wei, the CEO of TSMC, has said a shortage of capable engineers is the company's main bottleneck: engineers with basic capability need 8 years of training to work in one of TSMC's fabs. Some 300 Taiwanese engineers will move to Kumamoto to run the new plant there. Japan is meanwhile scrambling to train talent of its own. Building the next phase of the industry, says Mr Kuroda, will require more than just money and Moore's law: "We need more people." ■

Fission chips

Semiconductors



Sources: Boston Consulting Group; Semiconductor Industry Association

*Discretes, analog and optoelectronics & sensors
†Annual average increase of 30%, 2021-24 ‡Estimate

South Korean foreign policy

Arms and the Man

SEOUL

Despite NATO's pleas, South Korea refuses to arm Ukraine

WHEN YOON SUK-YEOL talked up the need for South Korea and NATO to protect "universal values" at the alliance's meeting in June 2022, he might not have imagined how soon his words would come back to bite him. But so they have. On a visit to Seoul on January 30th Jens Stoltenberg pushed South Korea's president to help meet Ukraine's urgent need for ammunition. It was time, according to NATO's secretary general, for Mr Yoon to "step up".

Since the invasion of Ukraine last February, South Korea has supplied it with non-lethal aid including gas masks and medical supplies. And under Mr Yoon, who took office last May, it has robustly condemned Russia's aggression. In a recent interview Mr Yoon called it "unlawful and illegitimate". He also suggested allowing the war to grind on might embolden his country's vicious neighbour, North Korea, into thinking "the international community would fail to respond to an act of invasion with the appropriate sanctions". Such statements are consistent with Mr Yoon's stated ambition, as Mr Stoltenberg might have reminded him, to make his country a more assertive global leader and defender of the rules-based order. Yet, despite having one of the world's biggest and fastest-growing defence industries, South Korea still refuses to send Ukraine arms.

The country's law and political sentiment are both against it. Under its Foreign Trade Act, South Korea is forbidden to export arms except for "peaceful purpose[s]". It has not scrupulously adhered to that. It has signed arms deals with the United Arab Emirates and Saudi Arabia, both of which have sent weapons to the civil war in Yemen. Moreover, as Mr Stoltenberg reminded Mr Yoon publicly, plenty of other countries, including Norway, Germany and Sweden, have scrapped such self-imposed restrictions in order to ship arms to Ukraine. Yet even if Mr Yoon wanted to follow their example, he appears unable to do so.

South Korea's parliament would have to change the law. And it is controlled by an opposition leader, Lee Jae-myung, hostile to Mr Yoon and at best lukewarm towards Ukraine. Mr Lee initially accused its president, Volodymyr Zelensky, of being partly to blame for the war. And though Mr Lee claims to have revised that view, he is in no mood to let Mr Yoon bend the rules or claim a major foreign-policy shift. Mr Lee accuses the president of launching a vendetta against him in the form of two separate corruption probes in which the opposition leader has been implicated.

Such inward-looking politics underline how hard it will be for Mr Yoon to make South Korea the agenda-setting "global pivot state" he has envisaged it as. In a poll last year, only 15% of respondents were in favour of supplying the Ukrainians with arms. And even in the country's small foreign-policy elite, there is only moderate enthusiasm for doing so. Many fear enraging Russia, which is believed to have important influence with North Korea. Such wariness was evident last November after the Biden administration was reported to be negotiating with South Korea to buy artillery shells in order to send them to Ukraine. Vladimir Putin, Russia's president, had previously warned South Korea that sending weapons to Ukraine would "destroy our relations". Mr Yoon's government quickly insisted that America would be the shells' end user.

▶▶

Kitted up for the DMZ

India's culture war

Bollywood v BJP

KOCHI

A Muslim megastar socks it to the Hindu right

THERE ARE two ways to interpret the raucous cheering that erupted in Kochi's Sridhar cinema at the sight of Deepika Padukone wearing a saffron bikini. One is that the mostly male audience, gathered one evening last week to see the new Bollywood blockbuster "Pathaan", appreciated the almond-eyed Ms Padukone's charms. Another is that the hooting and clapping, which the bikini scene has elicited in cinemas across India, was an explicit rebuke to the joyless bullies of the Hindu right, who had objected to thus cladding Ms Padukone in their religion's sacred colour. These explanations, it must be said, are not mutually exclusive.

The scene in question comes early in "Pathaan", a spy thriller so over-the-top it makes Hollywood's "Mission: Impossible" series seem like gritty realism. For weeks "Pathaan" and its lead man, Shah Rukh Khan, had received extremist threats because of it. Members of the Bajrang Dal, the youth wing of a family of Hindu-nationalist groups that includes the ruling Bharatiya Janata Party (BJP), claimed to believe that by wearing saffron while gyrating to a song titled "Besharam Rang" ("shameless colours") Ms Padukone had insulted their religion. Cinemas and members of the public were threatened with violence if they dared screen or watch the film. Senior BJP leaders in at least two states threatened to prevent its release.

The Hindu right often agitates against high-profile Bollywood releases. Its activists loathe the Mumbai film industry's liberal culture and the fact that its biggest stars are Muslim men. Last August the Hindu brigade went after "Laal Singh Chaddha", a big-budget remake of "Forrest Gump", on the basis that its (Muslim) lead actor, Aamir Khan, had once complained about growing intolerance in India. The film flopped, presumably because it was long and tedious, but the Hindu zealots claimed a scalp.

Both Shah Rukh Khan and Ms Padukone are favourite targets of Hindu nationalists—he on account of being Muslim and preaching the need for interfaith tolerance, she for having supported some student protesters in 2020 that the Hindu right disliked. But they are also favourites of India's film-loving public. And it thronged to cinemas over the long Republic Day weekend, January 26th-29th, helping "Pathaan" to smash box-office records by taking in over 6.25bn rupees ($76m) in its first week.

Perhaps recognising that the confected row was making his party look silly, Narendra Modi, the prime minister, had by that point asked BJP leaders to stop making "unnecessary comments [about films] that would overshadow the hard work we do". The BJP's hate-filled ideology may have a lock on the ballot box; but at the box office, "King Khan"'s message of love and fraternity still reigns.

This ambiguous position is straining not only Mr Yoon's hope of global leadership but also credulity. South Korea's defence companies, which are known for producing lots of high-quality weapons rapidly at competitive prices, are booming on the back of the global demand for arms that the war has unleashed. The country's defence exports increased from nearly $7.3bn in 2021 to $17bn in 2022. And a lot of them are going to countries arming Ukraine, ostensibly to allow them to replenish their depleted stocks. A recent deal with Poland, worth a reported 20trn won ($16.4bn), allowed the Poles to replace the howitzers they gave Ukraine last year.

In such circumstances, South Korea's legalistic distinction between arming Ukraine and its allies looks moot. In reality, says Jang Won-joon of the Korea Institute for Industrial Economics and Trade, a government think-tank, South Korea's view is that once its arms have been shipped, "it's none of our business" where they end up.

Mr Yoon's aim to grow the defence industry at least looks to be on track. He wants to make South Korea, in 2021 the eighth-biggest arms exporter, the fourth-biggest after America, France and Russia. But it is a shame his country's weak-kneed Ukraine stance is costing it an obvious opportunity to align his mercantile and global leadership ambitions. In its sometimes tortuous effort to occupy a space between America, its essential security partner, and China, its most important economic one, South Korea tries to manage two irreconcilable forces. This is almost the opposite case. In its Ukraine policy, it is failing to capitalise on the conjoined commercial and geopolitical opportunity that the war has handed it. ■

Banyan The South China Sea resistance

China's maritime neighbours are quietly resisting its more outrageous demands

THE SOUTH CHINA SEA is a third larger than the Mediterranean and has valuable fish stocks and untapped oil and gas reserves. Connecting East Asia's economic miracle with much of the rest of the world, its waters play an outsize role in global maritime trade and security. Yet there is a problem. All seven nations that border the sea maintain overlapping rights to it. And one of them, China, claims nearly the entire maritime expanse—and struts about it like a municipal swimming-bath bully.

With massive terraforming, China has turned remote reefs into airstrips and bases. It uses its navy and coastguard, as well as "maritime militias" of armed fishing fleets, to intimidate its South-East Asian neighbours. It forcibly curtails their fishing and exploration for hydrocarbons. It is obstructing the Philippines' efforts to resupply a remote island outpost. Yet for the first time in a decade, China is no longer making all the running in and around the sea. South-East Asians are at last refusing to yield to its provocations. This might—just—represent a turning-point in their struggle against the regional thug.

Much of the discord concerns maps. China's infamous "nine-dash line" is a tongue of cartographic aggression sticking out over 700 nautical miles from the Chinese coast. Its alleged basis is as vague as it is unfounded in international law. In 2016 a tribunal at The Hague—in a case brought by the Philippines—struck down most of China's claims, ruling them inconsistent with the UN Convention of the Law of the Sea (UNCLOS).

Since then other countries with rival claims in the South China Sea, including Indonesia, Malaysia, the Philippines, Vietnam and tiny Brunei, have insisted that international law must form the basis of any settlement of their disputes. In legal discussions with China, a senior South-East Asian diplomat notes, its maritime neighbours are taking enormous care not even to acknowledge its bogus nine-dash line claims. Partly as a result, China is seeing its various proposals to individual countries—for a bilateral fisheries agreement, say, or a deal on jointly exploring for hydrocarbons—turned down. Similarly, China is failing, after years of negotiations bedevilled by the outrageousness of its demands, to cajole the ten-country Association of South-East Asian Nations (ASEAN) into signing off on a tension-reducing code of conduct in the sea. China wants, in effect, a right to veto whatever naval exercises or oil and gas projects ASEAN members might wish to conduct with outside powers. But they are having none of that. And it is hardly good optics for China that the negotiations continue to breeze past whatever deadline it calls for.

Ever more obviously, South-East Asians are mastering and applying international law to push back against China. Malaysia's submission to the UN in 2019 for an extended continental shelf implied yet another rebuke of China's nine-dash line. Even more significant is a recent agreement between Indonesia and Vietnam to demarcate their exclusive economic zones. Huong Le Thu of the Perth USAsia Centre, an Australian think-tank, considers it an important model for South-East Asian countries to resolve claims among themselves.

Hard-nosed types will reply that what matters is what takes place on the water. There China's naval, coastguard and especially "grey zone" activities, whereby Chinese vessels swarm reefs and obstruct fishermen, have not let up. Yet some pushback to them, too, is apparent. Vietnam is reinforcing its outposts on the Spratly Islands. Military ties between the Philippines and the United States are rapidly thickening. Last year the two countries launched a "maritime dialogue" on grey-zone threats in the sea. Senior Biden administration officials have since flowed to Manila. The defence secretary, Lloyd Austin, visited this week to secure expanded access to Philippine bases. It was reported on February 2nd that an agreement had been struck granting America four new sites, in addition to the five it is already using.

None of the South-East Asian states wants to provoke China openly—that is not the ASEAN way. But an increasingly steadfast spirit of resistance is a growing feature of their response, in various spheres, to Chinese assertiveness. Even as China becomes less welcome in the South Pacific (see China section), it may be too much to think of it being pushed back in the South China Sea. But after a decade of China swanning about it unchecked, the maritime region's emerging stalemate is welcome.

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Myanmar at war

Asia’s multi-headed conflict

MAE SOT

Two years after an army coup, violence has reached the country’s heartland

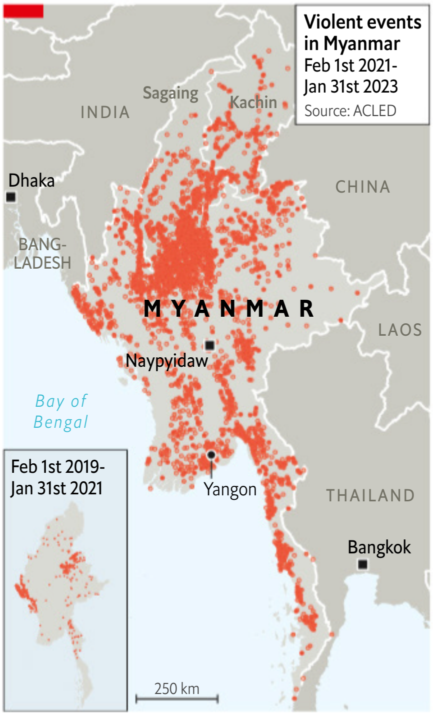
FOR A GLIMPSE of the labyrinthine conflict in Myanmar, head to the gemstone markets along the country’s border with Thailand and try on a ring encrusted with the finest imperial jade. If you meet the merchant’s asking price of 300,000 baht ($9,200), your purchase will bolster at least three different sides in Myanmar’s complicated and spreading civil war. You will help the brutal Burmese army, which controls the jade mines in the Himalayan foothills of Kachin state, worth tens of billions of dollars a year. And you will help an ethnic militia or two, representing minority groups that for years have fought for autonomy or independence in their homelands around Myanmar’s periphery. They collect a tax on goods that are trafficked across their turf.

You will also be contributing, via the shopkeeper, to a more recent military enterprise: the People’s Defence Force (PDF), a network of militias that has sprung up among the country’s Bamar majority to oppose its junta. Thein Han is a Bamar refugee from Sagaing province in Myanmar’s heartland. Two years ago, after General Min Aung Hlaing seized power in a violent coup and threw Aung San Suu Kyi and her recently re-elected government in jail, Mr Thein Han took to the streets in protest. He fled across the border after soldiers sought to arrest him one night; instead they nabbed his sister, who remains locked up. Mr Thein Han (not his real name) wants his future back. So each month he sends his savings to a chapter of the.DF.

The new PDF militias represent a grim development in Myanmar’s long-running conflict, which in the past two years is estimated to have claimed 30,000 lives and driven 2m people from their homes. The country had previously witnessed small-scale and decades-long ethnic conflicts. Separatists from the Karen minority have been up in arms since shortly after Myanmar (then called Burma) gained independence in 1948. Such micro-wars typically took the form of skirmishes in the dry season punctuated by regular ceasefires. Yet the coup that was launched by General Min Aung Hlaing in February 2021—the latest of many military takeovers in Myanmar—has profoundly altered the nature of the country’s violence.

It sparked peaceful street protests, which the junta brutally crushed. Around 140 protesters are estimated to have been killed by the security forces on a single day in March 2021. Instead of quelling the protests, this ruthlessness has radicalised many young Burmese men and women, says Michael Vatikiotis of the Centre for Humanitarian Dialogue, a conflict-mediation group. The resultant armed Burmese resistance, exemplified by the PDF groups, represents a decisive break within the majority group from the non-violence preached by Ms Suu Kyi. The resistance groups have also broken new ground by making common cause with several of the ethnic minority militias, which are providing them with shelter, training and arms in their jungle hideaways. As a result, Myanmar’s conflict has for the first time moved from the country’s periphery deep into the Bamar heartland, including especially the PDF stronghold of Sagaing state.

This new resistance lacks a charismatic leader. The National Unity Government (NUG), a shadow administration largely in exile, operates collectively and includes representatives of the country’s main ethnic groups. The especially-persecuted Rohingyas, a Muslim people in a majority-Buddhist country, are among them. Yet the PDF groups are mostly not taking orders from the shadow government. There is a generational split between the political and armed groups. The shadow government represents an old guard, including staunch followers of Ms Suu Kyi who still cling to the principle of non-violent resistance. The PDFs are led by Young Turks who grew up watching democracy flower only to see it mown down. These young radicals sometimes refer to their more patient elders as Generation *Lee*—which means “penis” in Burmese.



Violent events in Myanmar

Feb 1st 2021-Jan 31st 2023

Feb 1st 2019-Jan 31st 2021

Source: ACLED

PDF volunteers are poorly armed but becoming more adept at hit-and-run guerrilla warfare. By watching tutorials on YouTube, one volunteer said he learned how to drop bombs from a piece of PVC pipe attached to a cheap drone. He claimed it took him six months to be able to bomb junta convoys and use his drone’s noise to divert the army’s attention from his comrades’ imminent attacks. The PDFs’ drone warfare has grown so effective that the armed forces are increasingly resorting to air strikes on towns and villages suspected of harbouring militants, rather than using infantry. The country’s bigger cities, formerly the scene of protests and street-violence, are calm by comparison.

The fractured, ill-equipped opposition is not able to seize much territory. Yet the junta struggles to impose its writ across large parts of the country. The coup and its aftermath have shrunk the economy by a fifth. The resources available to General Min Aung Hlaing to wage war and keep the army’s civilian cronies sweet have dwindled as a result. Gas, gemstones, opium and methamphetamines are the junta’s main sources of hard currency.

Hundreds of thousands of the displaced have fled abroad, including to refugee camps in Bangladesh and Thailand. Myanmar is also exporting disorder, with drugs flooding into its neighbours. Even so, outsiders are wary of wading into the morass. Despite its intense geopolitical rivalry with China, America is reluctant to risk a proxy war by sending weapons to resistance forces on China’s doorstep, says Scot Marciel, a former American ambassador to Myanmar. China, with interests in Myanmar that include imports of rare-earth metals and oil and gas pipelines to the Bay of Bengal, seeks to be on friendly terms with the country’s prickly generals. Yet it is also in touch with the NUG and loth to get too drawn into the mess.

The UN says roughly 18m people, or a third of the country’s population, urgently need aid. And with neither side capable of victory, the situation looks certain to get worse. On February 1st the junta formally extended the state of emergency that it imposed after the coup. Its opponents are meanwhile growing increasingly organised and emboldened. A country long known for violence and dysfunction has become a catastrophe. ■

China and America

A representative challenge

As Xi Jinping tries to ease tensions with America, a new congressional committee risks exacerbating them

There has been a lull in the rancour between China and America in recent weeks. Fears of a war over Taiwan, though still widespread, have ebbed since Presidents Joe Biden and Xi Jinping met in Bali in November and agreed to resume high-level dialogue in less sensitive areas, including climate change. Their senior economic officials had "frank exchanges" in Zurich in January but agreed to enhance communication. And both sides seem keen to build on that momentum when Antony Blinken heads to China in early February on the first visit there by an American secretary of state since 2018.

But a fresh challenge to those efforts is now emerging in the shape of a Republican-led congressional committee that will investigate many of the most divisive areas of China-America relations. The House of Representatives' new China Select Committee has no legislative authority but can issue subpoenas and hold hearings. "There is bipartisan consensus that the era of trusting Communist China is over," Kevin McCarthy, the Republican speaker of the House, told legislators on January 10th, shortly before they approved the committee by 365 votes to 65. Mike Gallagher, the committee's chairman, wants to hold its first hearing by March "at the latest".

Congressional angst over China has come in waves ever since the Communist victory in 1949. In the aftermath, a poisonous debate over "who lost China?" led to an investigation by the since disbanded Senate Internal Security Subcommittee, which tried to blame left-leaning academics and diplomats. That scarred a generation of China experts and helped fuel the rise of Joseph McCarthy (no relation of Kevin), the Republican senator who led a witch-hunt for Communist sympathisers in the 1950s.

In the late 1990s another surge of apprehensiveness came with two China-related scandals—one involving campaign contributions, another the sale of American space technology—followed by President Bill Clinton's decision in 2000 to grant China "permanent normal trade relations". The same year, Congress created the Congressional-Executive Commission on China (CECC) and the US-China Economic and Security Review Commission (USCC), which report annually to the legislature.

The new China committee overlaps with them in some ways, but differs in key respects that could cause trouble, especially for Mr Xi's efforts to reassure Western businesses alarmed by his recent policies and the tensions over Taiwan. The CECC mainly scrutinises human-rights issues. Though it has subpoena powers, it rarely uses them. The USCC examines the national-security implications of relations with China but generally takes willing testimony from officials and academics.

The China Select Committee, by contrast, is designed to conduct high-profile investigations into almost any aspect of relations between America and China. Issues it could address include American arms sales to Taiwan, investments in China by American pension funds and Chinese ownership of American farmland, as well as China's political-influence operations in America and its role in fentanyl produc- ▸▸

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tion, according to Republicans involved.

It also has an articulate and relatively youthful chairman in Mr Gallagher, a 38-year-old Republican representative and former Marine intelligence officer with an international-relations doctorate from Georgetown University. While President Biden talks of avoiding a new cold war with China, Mr Gallagher argues that it is already under way and that America must accelerate legislative and executive action to prevail. At the same time, he appears mindful of the need to co-ordinate with other congressional committees and maintain bipartisan support for his own, calling for “serious, sober” people to join.

Republicans have named 13 members of the committee in all. They include several China hawks, but mostly figures who can work across the aisle. Only five served on Mr McCarthy’s 15-member China Task Force, which was designed to be bipartisan when launched in 2020 but lost Democrats’ support, partly over fears that it would overpoliticise the China issue. The sole Asian-American is Michelle Steel of California, who was born in South Korea.

Democrats have nominated 11 members, including three Asian-Americans. Raja Krishnamoorthi of Illinois, an Indian-American member of the Intelligence Committee, is taking the ranking slot. He said he was looking forward to working with colleagues from both parties to counteract the Chinese Communist Party’s “escalating aggression”, citing its threats against Taiwan and theft of American intellectual property. But he also urged the committee to avoid rhetoric that could fuel hostility towards Asian-Americans.

Agenda items

It is still unclear which issue the committee will tackle first. But Mr Gallagher says a priority is to address what he says is a backlog of weapons, worth $18bn-19bn, approved for sale to Taiwan but not yet delivered. He has also called repeatedly for TikTok, a Chinese-owned short-video app, to be banned or sold to an American entity.

All that will be hard for Mr Xi to stomach. For him, though, one of the biggest risks is that he overreacts, throwing more red meat to congressional hawks while missing the point that much of what the committee does will be political theatre. Although Chinese officials have toned down their rhetoric in recent weeks, they have been vitriolic in the past about the two China-focused commissions. In 2020 China imposed sanctions on the CECC and two of its Republican members.

Some experts who advise the Chinese government now fear that Republicans are trying to hijack China policy and push the two countries deeper into a cold-war-style confrontation. The new committee will act as a “stone thrower”, undermining any efforts by Mr Biden to work with China, says Dong Chunling of the China Institutes of Contemporary International Relations, a think-tank linked to China’s state security ministry. As America’s next presidential poll draws closer, its two parties’ China policies are likely to converge, he predicts, and relations with China could become a victim of America’s political struggles.

The committee could indeed make it harder for Mr Biden to manage China relations. Although his administration shows no sign of softening its stance on key issues such as Taiwan or the technology trade, it wants to work with China on building “guardrails” to prevent conflict. It is also hoping to co-operate in areas of global concern, such as cutting methane emissions and preparing for the next pandemic. The committee has no formal power to stop such initiatives. But its hearings will no doubt inflame public opinion, cramping Mr Biden’s room for manoeuvre.

That raises another potential problem for the American president. If the committee nudges him towards a more confrontational posture towards China, he risks alienating allies—particularly in Europe. Although many of them share some American concerns about Mr Xi’s policies, they are also anxious to re-engage with China commercially and are wary of being sucked into a military confrontation in Asia.

Yet there are pitfalls for Republicans, too. One is that their committee members become too critical of the Biden administration. Congressional committees derive credibility less from formal powers than from media interest, which can quickly wane if they descend into partisan bickering, says Robert Kelner, who heads the congressional-investigations practice at Covington & Burling, an American law firm. “If the media loses interest in a congressional investigation, that investigation is going to come to an end,” he says.

The other big risk is that the committee’s hearings lend weight to Democrats and other critics who worry about it fuelling anti-Asian violence. On January 10th, 23 House representatives issued a statement expressing concern over the committee’s direction and warning that “reckless and prejudiced rhetoric and policy” from Donald Trump and congressional Republicans had contributed to a rise of 339% in anti-Asian hate crimes in 2021.

Mr Gallagher dismisses those concerns, saying he aims to protect the Chinese diaspora from the Communist Party. But he does acknowledge the need to tread carefully, noting recently that Joseph McCarthy was also a former Marine intelligence officer from Wisconsin. “The lesson of Joseph McCarthy is that there’s always a risk of going overboard,” he said. “It’s on me to prove that the committee is a forum for serious, sober, statesman-like debate.” ■

The pandemic

Death and denial

Will we ever know how many people died of covid-19 in China?

THE WAVE of covid-19 that swept through China recently appears to have abated. Over 80% of the population has caught the virus in the last two months, says the government. The number of new cases is falling. China’s covid policies “can stand the test of history”, said Wang Wenbin, a spokesman for the foreign ministry, on January 10th. “We protected people’s lives and health to the greatest extent possible.”

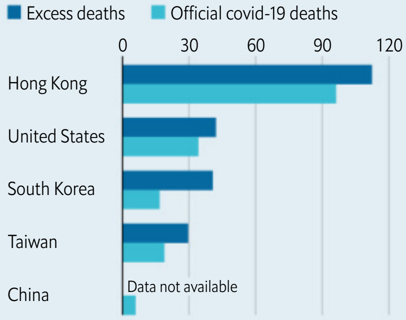
Official data support Mr Wang’s claim. The government says around 5,000 people died at the start of the pandemic in 2020, before China put in place strict “zero-covid” controls. Over the next three years few Chinese even caught the virus. After the zero-covid policy was scrapped in December, a further 80,000 died, according to the state. By this accounting, China fared much better during its Omicron wave of the virus than other countries (see chart).

But there is little doubt that China’s data are misleading. Doctors report being pressed to leave covid off death certificates. People who die at home are not counted at all by the state. Reports of overwhelmed hospitals and crematoriums suggest a far higher death toll. China was poorly prepared for this wave. Many old people were not fully vaccinated and supplies of covid drugs were inadequate.

The Economist’s own model predicted that if the virus spread unencumbered in China, between 1m and 1.5m people would die of covid during this wave. At a forum on December 17th, Wu Zunyou of China’s Cen-

Who’s undercounting?

Deaths per 100,000 population, first two months of Omicron wave*



*Start date is the date of the first reported Omicron case that was followed by at least three weeks of rising cases. Chinese data begin on Dec 7th 2022, when covid restrictions were lifted

Sources: Johns Hopkins University CSSE; *The Economist* excess-deaths tracker

More to mourn lately

tre for Disease Control and Prevention suggested that the Omicron variant, which is circulating in China, had a case-fatality rate of around 0.1%. That would imply a range of deaths in line with our model. "My starting-point would be 1m deaths," says Ben Cowling, a professor of epidemiology at the University of Hong Kong.

Chinese officials will not like hearing that. They have spent months shaming America for passing 1m covid deaths. "It proves the irresponsibility and incompetence of American politicians in anti-epidemic measures," said a commentary in the *People's Daily*, a party mouthpiece, in October. State television often pointed to the number of covid deaths in Western countries as a way of justifying brutal lockdowns at home. Even if China were to release a covid death toll in line with independent estimates, its propaganda organs could still boast of having many fewer deaths per 100,000 people than America and other Western countries.

China has said it will eventually release an estimate of "excess deaths": the gap between how many people died during the outbreak, regardless of cause, and how many deaths would have been expected otherwise. That would, in theory, take in undiagnosed covid deaths and those who died as a result of overwhelmed health services. But experts are sceptical that the number will reflect reality.

In general, Chinese people are moving on with their lives. Many travelled home for the lunar new-year holiday last month. Factory activity increased in January, as workers quickly shook off infections. But some of those who have lost loved ones are angry. "They basically sent old people to their deaths," says a woman whose grandmother died. She will not be waiting for the state to release more data: "I don't believe a word the government says." ■

China and Fiji

Irreconcilable differences

A geopolitical setback for China in the Pacific

CHINA'S DIPLOMATIC advance in the Pacific seemed unstoppable for much of last year. In April 2022 it signed a security pact with the Solomon Islands that laid the ground for Chinese forces to operate there. Later in the spring China's foreign minister, Wang Yi, sealed several more deals on an unprecedented eight-country Pacific tour. Although he didn't quite nail down a broader regional security agreement, he made it clear that China would keep pushing for it. "Don't be too nervous," he told Pacific leaders back then.

Nerves are more likely to be jangling now among Chinese officials. On January 25th they suffered one of their worst setbacks in the region when Sitiveni Rabuka, Fiji's prime minister, suddenly announced that he would terminate a security agreement with China dating to 2011. It had allowed Fijian police officers to train in China and Chinese officers to work in Fiji for up to six months at a time. "There's no need for us to continue," Mr Rabuka told the *Fiji Times*. "Our systems are different."

Worse still for China, Mr Rabuka said that police officers from Australia and New Zealand could continue to work in Fiji because their political systems were similar to the Pacific-island country's. His decision dealt a blow not just to Chinese efforts to secure a strategic foothold in a region long dominated militarily by America and its allies. It also undermined China's efforts to present its political system as a superior alternative to liberal democracy. And it comes as China's maritime neighbours in the South China Sea are pushing back against it, too (see Banyan).

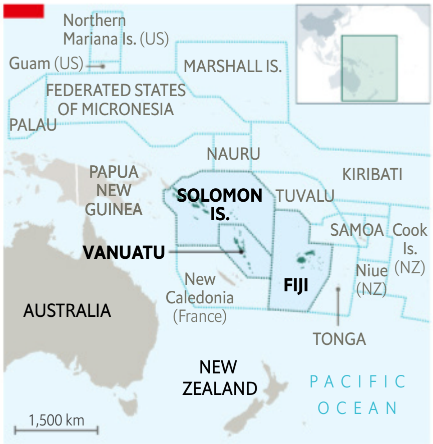
Mr Rabuka's move appears to be as much about establishing his own authority at home as about great-power competition. His predecessor, Frank Bainimarama, hatched the deal with China in 2011 to compensate for his then poor relations with America and its regional allies, Australia and New Zealand. All three had imposed sanctions on Fiji after Mr Bainimarama seized power in a coup in 2006. They lifted them after he won democratic elections in 2014, but he continued to pursue economic and security ties with China.

Mr Bainimarama lost an election in December. He initially conceded defeat but later backtracked, calling for senior officials to refuse the new government's demand that they resign. In the election's aftermath, the police chief called in the armed forces, citing a risk of ethnic unrest. That raised fears of another coup. Fiji has seen four since its independence from Britain in 1970—including two by Mr Rabuka. The police chief, who was close to Mr Bainimarama, was suspended on the same day the China deal was scrapped. Concerns about Fiji's political instability endure.

Even so, the termination of China's deal is a geopolitical win for America and its allies. China has recently sought to upgrade its links in the Pacific in a bid to contest America's influence and establish a military foothold there. Though it denies seeking a base, China has probably approached Vanuatu and the Solomon Islands about one, the Pentagon says. China also recently donated more combat-related kit to Pacific countries, giving Fiji a naval vessel in 2018 and 47 military vehicles in 2022. A Chinese police liaison officer has been based in Fiji since 2021. China's embassy in Fiji responded to Mr Rabuka's decision by saying that no external force would disrupt their military and police co-operation.

Since China's Solomons deal, America and its allies have stepped up their diplomatic and economic engagement in the region. President Joe Biden hosted 12 Pacific leaders (including Mr Bainimarama) at the White House in September. They agreed to work together to build a region in which "democracy will be able to flourish". America also pledged to provide an additional $810m in aid to the region.

Australia's foreign minister, Penny Wong, has been active too, visiting several Pacific nations, including Fiji. In October Australia and Fiji signed agreements on expanding police co-operation and deploying military forces on each other's territory. The Chinese government, meanwhile, is pressing ahead with its agreement with the Solomons, which sent 32 police officers to train in China in October. China also held a virtual meeting with police officials from six Pacific countries in November. It will no doubt have more to offer. For the moment, though, last year's Pacific foray is starting to look like overreach. ■



Chaguan | Why Russia is not a pariah in China

On the frozen China-Russia border, locals talk about the past and future

For generations China's people have been told that the outside world is—rather often—an unsafe and disappointing place. Communist Party ideologues teach that foreigners' quarrels are best understood as contests of strength and self-interest. Relentlessly, official speeches and news reports cast doubt on the notion that other countries' actions are explained by moral values, whatever outsiders claim. China is presented as an exception: a peace-loving giant that seeks only to do good.

Instilling cynicism about the world serves the party well. Without it, February 4th could be a ticklish anniversary for President Xi Jinping. It is a year since his declaration that China and Russia enjoy a "friendship without limits", days before Vladimir Putin launched his blood-soaked, land-grabbing invasion of Ukraine.

Russian savagery quickly obliged once-close partners, such as Germany, to declare Mr Putin a dangerous warmonger. Mr Xi has more room for manoeuvre because Russia is not a pariah in mainstream Chinese opinion. In part, propaganda and censorship explain why. Each night for almost a year, the main evening news has blamed the Ukraine conflict on America and the NATO defence alliance, which are accused of pushing Russia into a corner by expanding eastwards. As recently as January 30th, the foreign ministry in Beijing charged America with prolonging the war and of "profiteering from the fighting" by sending heavy weapons to Ukraine. Many Chinese who hear talk of Russian war crimes, such as an alleged massacre of civilians in Bucha, suspect that it is "fake news" invented by Ukraine and allies in the West, suggests Professor Wang Yiwei of Renmin University.

In part, something starker is at work. In its teachings the party implies that it is simply naive to ask whether governments are wicked or virtuous. Their impact on China is what counts. Russia has large armed forces and commodities to sell, and shares China's resentment of America. China's rulers, and still less its people, do not care who controls this or that oblast of Ukraine. But China does have a vital interest in discrediting American-led alliances, because those may threaten China one day in its East Asian backyard. It is thus desirable for Russia to successfully defy and divide the West, discredit NATO and survive sanctions imposed on it.

Indifference towards Russia's ruthlessness is not quite the same as approval of all Mr Putin's actions. Members of China's foreign-policy establishment, such as Professor Wang, admit to dismay that Russia has annexed chunks of Ukraine, which reminds scholars of tsarist Russia's seizure of 1.5m square kilometres of territory from China's last, enfeebled imperial dynasty. But a foreign power need not be admirable to be useful.

Heilongjiang province, in China's frozen far north, is an unusually good place to observe such chilly pragmatism. When China and the Soviet Union came close to all-out war in the late Mao era, Red Guards ransacked an onion-domed Russian Orthodox cathedral in Harbin, a city founded as a railway hub by tsarist troops and settlers over 120 years ago. Today Harbin markets the ex-cathedral as a romantic, "European-style" tourist site. On a recent evening Chaguan bought a ticket and asked selfie-snapping visitors whether the Ukraine war has changed their views of Russia. Not really, said two university students from the nearby province of Liaoning. Russia is good because it has not betrayed China's global or national interests, said one. Conversation turned to the changing global balance of power. China learned Marxist-Leninism from Russia and is now a "soaring dragon of the East", while the West is in "slow decline", added his friend.

A slow sleeper train then carried Chaguan north to the city of Heihe, on the ice-bound border river with Russia. In 1900 Russian Cossack troops seized the river's northern bank by driving Chinese farmers and labourers into the water. Thousands drowned. A British passport secured entry to the nearby Aihui History Museum (Russian citizens are "generally" not admitted, museum guards confessed), where this grim massacre is commemorated by a 69-metre-long panoramic painting. It shows Cossacks raping women, driving Chinese into the river at bayonet-point and machine-gunning those in the water. In all, the museum records centuries of Russian invasions. A text at the exit tells visitors the lesson to draw from this history: work to make China and its armies strong, do not nourish hatreds. "If you're weak, you're bullied. If you fall behind, you'll be beaten," it counsels.

Just upstream of the museum stands Heihe's hope for the future, the first China-Russia road bridge over the border river. It opened in summer 2022 after years of Russian foot-dragging, driven by fears of China dominating Russia's sparsely peopled far east. "Of course" locals remember Russia's past depredations, said a woman whose shop sells Russian honey, chocolates and other souvenirs to Chinese tourists (or did before covid controls sealed the city for almost three years). But if cross-border trade opens up, "Heihe has a chance to really take off."

Might trumps right

A neighbouring shopkeeper called Russia poor and China rich. He proudly reported that "beautiful" Russian women marry Chinese men. He has never heard of Chinese women taking Russian husbands. He deemed Russia "all right", as a country. A friend joining him for a smoke denounced America, Britain and their allies for meddling in Ukraine. If Russia chooses to attack Ukrainians, that is a civil war, the friend growled: "It is all the same country."

A third trader predicted that shoddy Russian infrastructure will slow local development, though cheap oil and gas from Russia should help China overall. He blamed deaths in Ukraine on the West, because without NATO weapons the smaller country would have lost to Russia "long ago". His focus on relative strength, rather than the rights and wrongs of invasion, made for a bleak view of peacemaking. It suits leaders in far-off Beijing just fine. ■

Business

India Inc

Adani under fire

MUMBAI

A short-seller's attack on a business empire raises thorny questions about Indian capitalism

GAUTAM ADANI is no stranger to ambush. In 1998 the Indian tycoon was kidnapped and reportedly released for a multimillion-dollar ransom. In 2008 he was at the Taj Mahal Palace Hotel in Mumbai during a terrorist attack, and spent a night hiding in the basement.

Now he faces an assault of a different kind—not on his person but on the conglomerate that bears his name. In the space of a week a staggering $108bn, or nearly half, has been wiped from the market value of the Adani Group's ten listed firms (see chart 1 on next page). The yields on some of those firms' bonds at times spiked into distressed territory (see chart 2). Mr Adani's personal fortune, the world's third-biggest at the start of the year, has shrivelled by more than $50bn. A $2.5bn secondary share offering of his flagship listed entity, Adani Enterprises, was abruptly pulled on February 1st. The rout, which continued as *The Economist* went to press on February 2nd, raises questions about one of India's mightiest business houses, the fate of its pharaonic ambitions in everything from clean energy to media—and about India's tycoon-powered version of capitalism.

The haemorrhage was caused by what looks—next to an industrial empire spanning ports, power stations and much besides—like a peashooter. On January 24th Hindenburg Research, a New York investment firm (see next article), published a report accusing the Adani Group of pulling "the largest con in corporate history". Hindenburg, which had taken short positions on some internationally traded Adani bonds and derivatives, detailed allegations of stock manipulation and other financial mischief. The purpose, according to the short-seller, was to inflate the market value of Mr Adani's listed companies. Within days the Adani Group issued a 413-page rebuttal, calling Hindenburg's report "all lies"—and a "calculated attack" on India itself. The Adani Group said it had always been in "compliance with all laws".

This forceful response initially looked like enough to let Adani Enterprises conclude its secondary share offering, which was due to price on February 1st. With the firm's existing shares trading below the offering's issue price, retail investors showed tepid interest. Still, Adani Enterprises managed to line up anchor investors (among them the Life Insurance Corporation of India, or LIC, the State Bank of India, and some big American banks) and a handful of deep-pocketed backers who apparently did not mind paying over the odds. These included International Holding Company, an Emirati fund with investments in Adani companies, which chipped in $400m, as well as, reportedly, several family offices of fellow Indian plutocrats.

Then, on the afternoon of February 1st, Bloomberg reported that Credit Suisse, a bank, had stopped accepting Adani firms' bonds as collateral for margin loans to its private-banking clients. The share price of Adani Enterprises collapsed by nearly 30%. Those of other Adani firms also slid. The prices of their bonds, having clawed back earlier losses the day before, took another hammering. It was later that evening that the Adani Group cancelled the secondary offering, pointing to "unprecedented" market conditions.

What comes next is uncertain. Adani executives have been dispatched around the world to reassure nervy investors. An internal risk team first created to deal with the covid-19 shock, then deployed to tackle problems arising from supply-chain disruptions caused by the war in Ukraine, has been put on high alert. Spending plans are said to be funded for the next two or three years. In the statement calling off the share issue, Mr Adani said, "Our balance-sheet is very healthy with strong cashflows and secure assets, and we have an impeccable track record of servicing our debt."

▶▶

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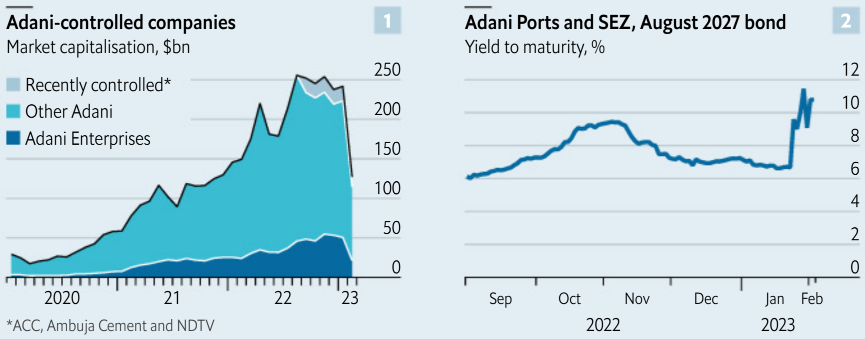
The Hindenburg effect



*ACC, Ambuja Cement and NDTV

Sources: Refinitiv Datastream; Bloomberg

The threat to the empire does not appear existential. Mr Adani is considered an able operator and his companies own many valuable assets. They run some of India's biggest ports (plus a few in Australia, Israel and Sri Lanka), warehouse 30% of its grain, operate a fifth of its power-transmission lines, accommodate a quarter of its commercial air traffic, and produce perhaps a fifth of its cement. A Singaporean joint venture vies to be India's largest food company. In the last financial year the group's listed companies had total revenues of $25bn, equivalent to 0.7% of Indian GDP, and a net profit of $1.8bn. Their combined annual capital spending of around $5bn accounts for 7% of the total for India's 500 biggest non-financial firms.

In his statement, Mr Adani insisted that the decision to scrap the secondary offering "will not have any impact on our existing operations and future plans". No rating agency has yet reappraised the group's debt, which boasts an investment grade. Nor have Hindenburg's allegations so far led compilers of global stockmarket indices to drop Adani firms from their benchmarks. One of the index-managers, FTSE Russell, has said it does not at this point intend to take action. Another, MSCI, is expected to weigh in soon.

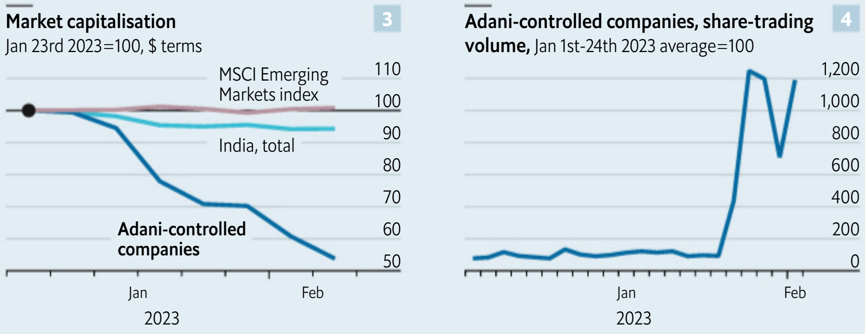
Yet it is hard to believe that Mr Adani's nation-building designs will be unaffected. Between 2023 and 2027 his group was forecast to spend more than $50bn on investments. It is building a new airport near Mumbai, splurging $5bn on three seaports, and planning to construct a $5bn steel mill in partnership with POSCO, a South Korean conglomerate. Its envisioned projects in renewables and hydrogen were seen as the cornerstone of an effort, championed by India's prime minister, Narendra Modi, to turn the country into a global clean-energy powerhouse. All this requires masses of capital, a slug of which was meant to come from the new share offering. If the yields on Adani bonds remain elevated, and its share prices depressed, securing the necessary funds will prove difficult.

Then there are the possible spillovers to the rest of India Inc. So far the knock-on effects on firms like LIC and State Bank of India have been painful but not life-threatening; their share prices declined by 8% and 5%, respectively, on February 1st. LIC says that Adani shares make up less than 1% of its assets under management. Virtually no Indian mutual funds hold significant stakes in the group's companies (a fact that Hindenburg cited in its report as evidence of the Indian market's lack of confidence in them). State Bank of India, which is also a lender to the group, says it is not concerned about its loans to Adani companies, which are secured by cash-generating assets. CLSA, a broker, puts Indian lenders' total exposure to the five biggest Adani firms at $24bn—a manageable 0.5% of all loans across the Indian banking sector.

Foreign investors are not taking any chances. In the past week Indian stocks have underperformed other emerging markets (see chart 3). In just two days, Friday January 27th and Monday January 30th, global funds pulled a net $1.5bn from the Indian stockmarket. Compliance-obsessed Western multinationals may think twice before forging new partnerships with tycoons, in recent years their preferred route to the vast Indian market.

As the week's drama unfolded, Mr Adani was himself abroad, officially taking ownership of the port in Haifa he acquired in 2022 for $1.2bn—and unofficially doubtless trying to send a reassuring message to his foreign backers. "I promise you that in the years to come we will transform the skyline we see around us," he told his Israeli audience on January 31st. He first has an awful lot of repair work to be getting on with at home. ■

The Adani discount



Sources: Bloomberg; Refinitiv Datastream

Hindenburg Research

Fireworks artists

Meet the short-seller that has picked a fight with the Adani Group

NAMING A HEDGE fund is easy. Anodyne references to the natural world (peaks, stones, rivers or points) will usually do. Failing that, invoke ancient Greece. Christening a shock-and-awe short-selling outfit requires more creativity. Hindenburg Research, named after the doomed hydrogen-filled German airship, was founded by Nathan Anderson in 2017 to hunt for impending corporate disasters, and then hold a torch to them. The firm releases research reports on its website and typically profits when its targets' shares plummet in value.

Hindenburg's reports allege all manner and seriousness of mischief, from insider transactions to accounting alchemy. Its latest publication has catapulted its inventive moniker into the headlines worldwide. On January 24th it accused the Adani Group, a giant Indian conglomerate run by one of the world's richest tycoons, of stock manipulation and fraud. The Adani Group says that the charges are baseless and released a lengthy rebuttal.

Mr Anderson's operation sleuths at pace. In the past two years it has published 19 investigations. Compared with Adani, most are minnows. Firms going public

Anderson, the Adani-rattler

through special-purpose acquisition companies (SPACs), a controversial corporate form made popular during the pandemic listing boom, have proved a rich hunting ground. Hindenburg gained notoriety in 2020, after it accused Nikola, a startup with plans to make battery-powered lorries which listed via a SPAC, of rolling a powerless vehicle down a hill in a misleading promotional video. Nikola's founder was later found guilty of defrauding investors by a federal court in New York.

Hindenburg's targets often see a swift share-price drop, regularly of more than 10%. The Adani Group's listed firms have so far lost around half their combined value. Nikola's is down by over 90%. Even so, it is famously tough to turn a profit from short-selling, where potential gains are capped and losses, made when share prices rise rather than fall, are not (see Buttonwood). Carson Block of Muddy Waters, a high-profile short-seller, has questioned whether it is worth the stress. Bill Ackman, an American investor who has tweeted his support for Hindenburg in its pursuit of Adani, announced last year that he was quitting activist short-selling.

Few believe that trying to expose fraud is anything but good for markets. That doesn't lift the cloud of suspicion surrounding short-sellers and their reliability. Mr Anderson has acknowledged that Hindenburg teams up with outside "investors" but declined to identify them. To some, such bedfellows are necessary; wealthy individuals or funds can provide financial backing, tips and research without attracting the public scrutiny that comes with shorting. To others, opaque relationships open the door to conflicts of interest. Regulators in America may soon force additional transparency. In the meantime Hindenburg will continue to seek out potentially flammable marks. ■

Artificial intelligence

Battle of the labs

As the AI race heats up, ChatGPT is not the only game in town

EVERY SO OFTEN a technology captures the world's imagination. The latest example, judging by the chatter in Silicon Valley, on Wall Street, in corner offices, newsrooms and classrooms around the world, is ChatGPT. In five days after its unveiling in November the artificially intelligent chatbot, created by a startup called OpenAI, drew 1m users, making it one of the fastest consumer-product launches in history. Microsoft, which has just invested $10bn in OpenAI, wants ChatGPT-like powers, which include generating text, images and video that seem like they could have been created by humans, to infuse much of the software it sells. On January 26th Google published a paper describing a similar model that can create music from a text description of a song. Investors in Alphabet, its parent company, are listening out for its answer to ChatGPT. Baidu, a Chinese search giant, reportedly plans to add a chatbot to its search engine in March.

It is too early to say how much of the early hype is justified. Regardless of the extent to which the "generative" AI models behind ChatGPT and its rivals transform business, culture and society, however, they are already transforming how the tech industry thinks about innovation and its engines—the corporate research labs that, like OpenAI and Google Research, are combining big tech's processing power with the brain power of some of computer science's brightest sparks. These rival labs—be they part of big tech firms, affiliated with them or run by independent start-ups—are engaged in an epic race for AI supremacy (see chart 1). The result of that race will determine how quickly the age of AI will dawn for computer users everywhere—and who will dominate it.

Corporate research-and-development (R&D) organisations have long been a source of scientific advances, especially in America. A century and a half ago Thomas Edison used the proceeds from his inventions, including the phonograph and the lightbulb, to bankroll his workshop in Menlo Park, New Jersey. After the second world war, America Inc invested heavily in basic science in the hope that this would yield practical products. DuPont (a maker of chemicals), IBM and Xerox (which both manufactured hardware) all housed big research laboratories. AT&T's Bell Labs produced, among other inventions, the transistor, laser and the photovoltaic cell, earning its researchers nine Nobel prizes.

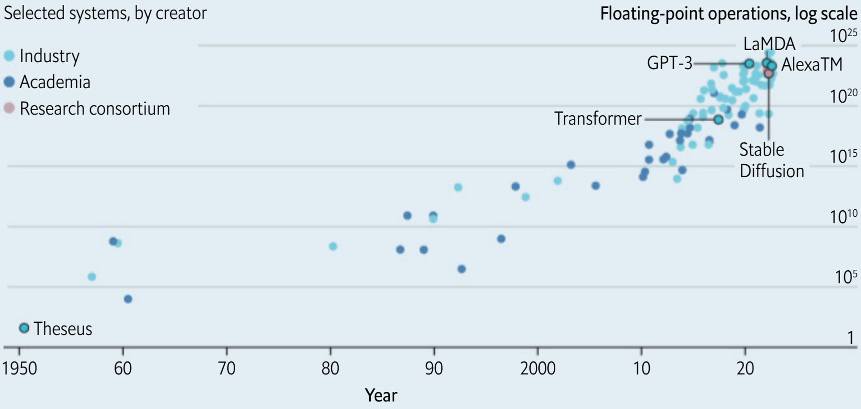
In the late 20th century, though, corporate R&D became steadily less about the R than the D. In 2017 Ashish Arora, an economist, and colleagues examined the period from 1980 to 2006 and found that firms had moved away from basic science towards developing existing ideas. The reason, Mr Arora and his co-authors argued, was the rising cost of research and the increasing difficulty of capturing its fruits. Xerox developed the icons and windows now familiar to computer-users but it was Apple and Microsoft that made most of the money from it. Science remained important to innovation, but it became the dominion of not-for-profit universities.

The rise of AI is shaking things up once again. Big corporations are not the only game in town. Startups such as Anthropic and Character AI have built their own ChatGPT challengers. Stability AI, a startup that has assembled a consortium of small firms, universities and non-profits to pool computing resources, has created a popular open-source model that converts text to

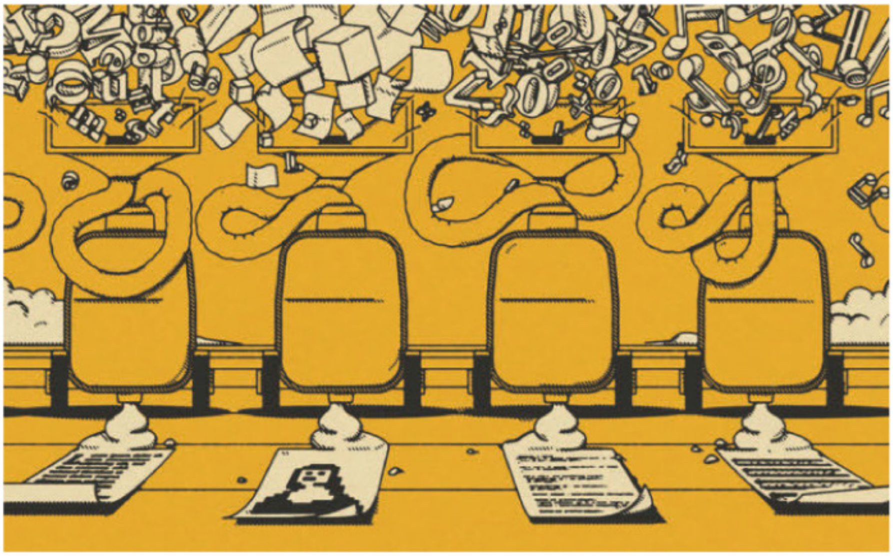
Petaflophouses 1

Computing power used in training AI systems

Selected systems, by creator



Sources: "Compute trends across three eras of machine learning", by Sevilla et al., 2022; Our World in Data



images. In China, government-backed outfits such as the Beijing Academy of Artificial Intelligence (BAAI) are pre-eminent.

But almost all recent breakthroughs in big AI globally have come from giant companies, because they have the computing power (see chart 2), and because this is a rare area where results of basic research can be rapidly incorporated into products. Amazon, whose AI powers its Alexa voice assistant, and Meta, which made waves recently when one of its models beat human players at "Diplomacy", a strategy board game, respectively produce two-thirds and four-fifths as much AI research as Stanford University, a bastion of computer-science eggheads. Alphabet and Microsoft churn out considerably more, and that is not including DeepMind, Google Research's sister lab which the parent company acquired in 2014, and the Microsoft-affiliated OpenAI (see chart 3).

Expert opinion varies on who is actually ahead on the merits. The Chinese labs, for example, appear to have a big lead in the subdiscipline of computer vision, which involves analysing images, where they are responsible for the largest share of the most highly cited papers. According to a ranking devised by Microsoft, the top five computer-vision teams in the world are all Chinese. The BAAI has also built what it says is the world's biggest natural-language model, Wu Dao 2.0. Meta's "Diplomacy" player, Cicero, gets kudos for its use of strategic reasoning and deception against human opponents. DeepMind's models have beat human champions at Go, a notoriously difficult board game, and can predict the shape of proteins, a long-standing challenge in the life sciences.

Jaw-dropping feats, all. When it comes to the sort of AI that is all the rage thanks to ChatGPT, though, the big battle is between Microsoft and Alphabet. To see whose tech is superior, *The Economist* has put both firms' AIs through their paces. With the help of an engineer at Google, we asked ChatGPT, based on an OpenAI model called GPT-3.5, and Google's yet-to-be-launched chatbot, built upon one called LaMDA, a set of questions. These included ten problems from an American maths competition ("Find the number of ordered pairs of prime numbers that sum to 60") and ten reading questions from America's SAT school-leavers' exam ("Read the passage and determine which choice best describes what happens in it"). To spice things up, we also asked each model for dating advice ("Given the following conversation from a dating app, what is the best way to ask someone out on a first date?").

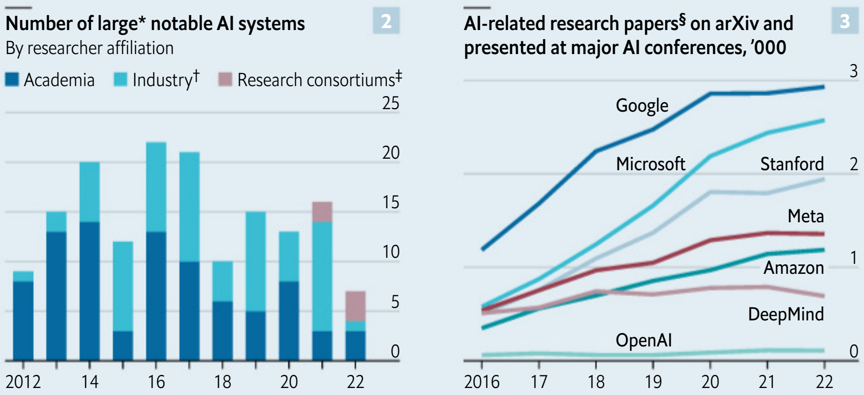
Neither AI emerged as clearly superior. Google's was slightly better at maths, answering five questions correctly, compared with three for ChatGPT. Their dating advice was uneven: fed some real exchanges in a dating app, each gave specific suggestions on one occasion, and platitudes such as "be open minded" and "communicate effectively" on another. ChatGPT, meanwhile, answered nine SAT questions correctly compared with seven for its Google rival. It also appeared more responsive to our feedback and got a few questions right on a second try. On January 30th OpenAI announced an update to ChatGPT improving its maths abilities. When we fed the two AIs another ten questions, LaMDA again outperformed by two points. But when given a second chance ChatGPT tied.

The reason that, at least so far, no model enjoys an unassailable advantage is that AI knowledge diffuses quickly. Researchers from competing labs "all hang out with each other", says David Ha of Stability AI. Many, like Mr Ha, who used to work at Google, move between organisations, bringing expertise and experience with them. Moreover, since the best AI brains are scientists at heart, they often made their defection to the private sector conditional on a continued ability to publish their research and present results at conferences. That is partly why Google made public big advances including the "transformer", a key building block in AI models, giving its rivals a leg-up. (The "T" in ChatGPT stands for transformer.) As a result of all this, reckons Yann LeCun, Meta's top AI boffin, "Nobody is ahead of anybody else by more than two to six months."

These are, though, early days. The labs may not remain neck-and-neck for ever. Google has reportedly issued a "code red", fearing that ChatGPT could boost Microsoft's rival Bing search engine. Researchers at DeepMind say their firm, which has historically focused on game-playing and science, is putting more resources into language modelling; its chatbot, called Sparrow, may be unveiled this year.

One variable that may help determine the ultimate outcome of the contest is how labs are organised. OpenAI, a small firm with few revenue streams to protect, may find itself with more latitude than rivals to ▸▸

Industrial Action



Sources: Epoch; State of AI Report; Zeta Alpha; Nathan Benaich

*Greater than 1bn parameters †With at least one author from institution ‡Startups, universities and/or non-profit organisations §Includes collaborations with academia release products to the public. That in turn is generating tonnes of user data that could make its models better ("reinforcement learning from human feedback", if you must know)—and thus attract more users.

This early-mover advantage could be self-reinforcing in another way, too. Insiders note that OpenAI's rapid progress in recent years has allowed it to poach experts from rivals including DeepMind. To keep up, Alphabet, Amazon and Meta may need to rediscover their ability to move fast and break things—a delicate task given all the regulatory scrutiny they are receiving from governments around the world.

Another deciding factor may be the path of technological development. So far in generative AI, bigger has been better. That has given rich tech giants a huge advantage. But size may not be everything in future. For one thing, there are limits to how big the models can conceivably get. Epoch, a non-profit research institute, estimates that at current rates, big language models will run out of high-quality text on the internet by 2026 (though other less-tapped formats, like video, will remain abundant for a while). More important, as Mr Ha of Stability AI points out, there are ways to fine-tune a model to a specific task that "dramatically reduce the need to scale up". And novel methods to do more with less are being developed all the time.

The capital flowing into generative-AI startups, which last year collectively raised $2.7bn in 110 deals, suggests that venture capitalists are betting that not all the value will be captured by big tech. Alphabet, Microsoft, their fellow technology titans and the Chinese Communist Party will all try to prove these investors wrong. The AI race is only just getting started. ■

Bartleby Machine learnings

How do employees and customers feel about artificial intelligence?

IF YOU ASK something of ChatGPT, an artificial-intelligence (AI) tool that is all the rage, the responses you get back are almost instantaneous, utterly certain and often wrong. It is a bit like talking to an economist. The questions raised by technologies like ChatGPT yield much more tentative answers. But they are ones that managers ought to start asking.

One issue is how to deal with employees' concerns about job security. Worries are natural. An AI that makes it easier to process your expenses is one thing; an AI that people would prefer to sit next to at a dinner party quite another. Being clear about how workers would redirect time and energy that is freed up by an AI helps foster acceptance. So does creating a sense of agency: research conducted by *MIT Sloan Management Review* and the Boston Consulting Group found that an ability to override an AI makes employees more likely to use it.

Whether people really need to understand what is going on inside an AI is less clear. Intuitively, being able to follow an algorithm's reasoning should trump being unable to. But a piece of research by academics at Harvard University, the Massachusetts Institute of Technology and the Polytechnic University of Milan suggests that too much explanation can be a problem.

Employees at Tapestry, a portfolio of luxury brands, were given access to a forecasting model that told them how to allocate stock to stores. Some used a model whose logic could be interpreted; others used a model that was more of a black box. Workers turned out to be likelier to overrule models they could understand because they were, mistakenly, sure of their own intuitions. Workers were willing to accept the decisions of a model they could not fathom, however, because of their confidence in the expertise of people who had built it. The credentials of those behind an AI matter.

The different ways that people respond to humans and to algorithms is a burgeoning area of research. In a recent paper Gizem Yalcin of the University of Texas at Austin and her co-authors looked at whether consumers responded differently to decisions—to approve someone for a loan, for example, or a country-club membership—when they were made by a machine or a person. They found that people reacted the same when they were being rejected. But they felt less positively about an organisation when they were approved by an algorithm rather than a human. The reason? People are good at explaining away unfavourable decisions, whoever makes them. It is harder for them to attribute a successful application to their own charming, delightful selves when assessed by a machine. People want to feel special, not reduced to a data point.

In a forthcoming paper, meanwhile, Arthur Jago of the University of Washington and Glenn Carroll of the Stanford Graduate School of Business investigate how willing people are to give rather than earn credit—specifically for work that someone did not do on their own. They showed volunteers something attributed to a specific person—an artwork, say, or a business plan—and then revealed that it had been created either with the help of an algorithm or with the help of human assistants. Everyone gave less credit to producers when they were told they had been helped, but this effect was more pronounced for work that involved human assistants. Not only did the participants see the job of overseeing the algorithm as more demanding than supervising humans, but they did not feel it was as fair for someone to take credit for the work of other people.

Another paper, by Anuj Kapoor of the Indian Institute of Management Ahmedabad and his co-authors, examines whether AIs or humans are more effective at helping people lose weight. The authors looked at the weight loss achieved by subscribers to an Indian mobile app, some of whom used only an AI coach and some of whom used a human coach, too. They found that people who also used a human coach lost more weight, set themselves tougher goals and were more fastidious about logging their activities. But people with a higher body mass index did not do as well with a human coach as those who weighed less. The authors speculate that heavier people might be more embarrassed by interacting with another person.

The picture that emerges from such research is messy. It is also dynamic: just as technologies evolve, so will attitudes. But it is crystal-clear on one thing. The impact of ChatGPT and other AIs will depend not just on what they can do, but also on how they make people feel.

Social media

Mark to market

After a torrid 2022, things are looking up for Meta. Is the worst over?

For Mark Zuckerberg, the first three quarters of last year were rough. In July 2022 his social-media empire, Meta, announced its first ever year-on-year decline in quarterly revenues. Three months later it reported another. Investors sneered at his expensive pivot from a lucrative ads business to the untested realm of the metaverse, on which Mr Zuckerberg was splurging $10bn a year. By November Meta had lost roughly three-fifths of its market value since its peak of $1.1trn in August 2021, when the covid-19 pandemic meant that much of daily life was being lived online. Shortly after he sacked 11,000 people, or 13% of its workforce. All the while, he has been fending off trustbusters and, in TikTok, a rival that has proved considerably more adept than previous challengers such as Snap or Pinterest at attracting eyeballs—and with them advertising dollars.

On February 1st Mr Zuckerberg reported another decline in sales for the last three months of 2022, of 4.5% year on year. But the drop was smaller than expected. The company also put out an optimistic forecast for the current quarter, in which it thinks revenue could reach $28.5bn. That would be more than in the first three months of 2021, before Apple introduced privacy rules for its iDevices that made it considerably harder for advertisers to track users across the internet. Costs are coming under control, Mr Zuckerberg promised, and the company would be "be more proactive about cutting projects that aren't performing or may no longer be as crucial". The firms said it would buy back an additional $40bn-worth of shares. To top it off, on the same day a judge in California threw out a lawsuit brought by the Federal Trade Commission (FTC) to block Meta's acquisition of Within, a maker of a popular virtual-reality fitness app.

Investors greeted all this with a big "like". Meta's share price, which had already risen by over 70% in the previous three months, leapt by another 20% or so after hours. That would put its market capitalisation at $484bn. Squint and the company, which had been all but relegated from the ranks of big tech, is back in the fold.

Can the hot streak last? Mr Zuckerberg has reasons for cautious optimism. Meta has come up with ways to work around Apple's privacy settings. Its artificial-intelligence capabilities are improving, both in the lab (see previous article) and in the real world—specifically, in the world of Reels, where algorithms for serving up short videos on Facebook and Instagram, Meta's two profit motors. These are reportedly getting cleverer at creating engagement. TikTok, which is owned by a Chinese company, is under increasing scrutiny in America, where some politicians are calling for a ban on the popular app. Even Apple has given Mr Zuckerberg's vision of the metaverse a backhanded compliment, by working on its own virtual-reality-like headset.

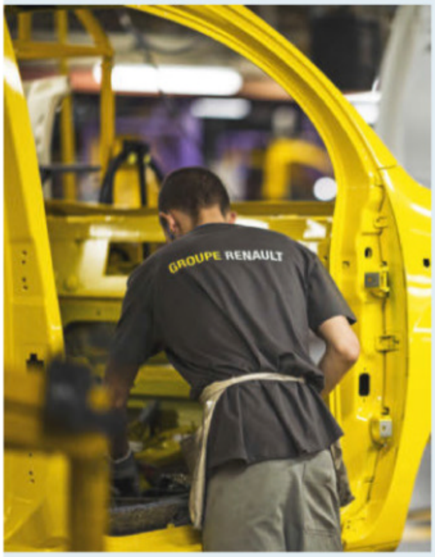
Plenty could still go wrong. What used to be recession-proof digital-ad spending is becoming more cyclical, and the economic cycle is turning downwards. Even if Meta's Western markets avoid a recession, advertisers are likely to rein in spending. Despite a degree of bipartisan support for a TikTok ban, political gridlock in Washington makes any actual legislation to that effect unlikely in the near future. Its courtroom win over Within notwithstanding, Meta still faces other—more serious—challenges from regulators at home (where another FTC lawsuit calls for its break-up) and in Europe (where tough new rules on large digital platforms are being finalised). And few people are burning to migrate to the metaverse. Late last year Horizon Worlds, Meta's main metaversal attraction, was reportedly losing users. Mr Zuckerberg is not out of the woods. But he no longer seems lost in the jungle. ■

Renault and Nissan

Entente cordiale

A new start should improve a once-fractious carmaking tie-up

Relationships do not always live up to the hopes of yesteryear. In 2018 Carlos Ghosn, then boss of the Renault-Nissan-Mitsubishi alliance, predicted combined sales of 14m vehicles in 2022. In fact sales may not have hit half that number. Pandemic-era supply-chain snarl-ups are only partly to blame. Another reason was the failure of Mr Ghosn's plan for a much closer bond between Nissan, the Japanese firm he had rescued from bankruptcy in 1999, and Renault (the smaller Mitsubishi has been less integral to the pact). Although the partners benefited from joint purchasing, a few shared factories and some common parts and designs, Nissan largely followed its own road: the Renault Zoe and Nissan Leaf, similar electric cars, shared few components.



Looking for that spark again

On January 30th, after months of wrangling, the companies at last reset the lopsided liaison resulting from Nissan's salvage. This had involved the Japanese firm holding a 15% stake in Renault, with the French carmaker controlling 43% of Nissan. The uneven arrangement always infuriated the bigger and generally more profitable Japanese firm, which feared meddling by the French state, which owns 15% of Renault. Tensions were held in check only by the force of Mr Ghosn's personality—until his detention in Japan for what he says were trumped-up charges designed to derail his plans for a closer tie-up.

The new set-up would, if the boards sign off on it, reduce Renault's voting rights at Nissan to 15%, with the remaining 28% of shares being put in a trust. This suits both firms, not least because it lets them avoid the near-impossible task of unpicking the longstanding union. Nissan would gain voting rights to match its hitherto non-voting Renault interest. For Renault, the change removes the frustration that its stake in Nissan did not translate into meaningful control.

"Reloading the partnership" will include pursuing a few new projects. Nissan is likely to invest in Ampere, Renault's electric-vehicle-and-software unit that it intends to spin off this year. Renault will keep pocketing the dividends from Nissan, though it is expected to sell down the stake held in trust over time. Both can spend less time papering over the cracks of a dysfunctional relationship, and more navigating their rapidly changing industry while fending off a convoy of new rivals.

Schumpeter | Kaizen, Chinese-style

Carmakers beware: BYD is more like Toyota than Tesla

To get a sense of why Toyoda Akio announced on January 26th that he would hand over the keys to the world's biggest carmaker to Sato Koji, his number two, watch the surreal video from 2021 of the two of them driving Toyota's first Lexus electric vehicle (EV). Mr Toyoda is at the wheel. At first, it is clear that he is a bit of an EV sceptic: he notes that the car feels heavy to drive. Then he puts his foot to the floor, and as the speed picks up he whoops with joy like an overexcited Top Gun pilot. It is cringeworthy—but pertinent. Toyota is seen by many as an EV laggard. In announcing his decision to vacate his position to Mr Sato, who is 13 years younger, the chairman-designate made clear it was time for a new generation to speed up the move into the electric era.

Much of the media commentary surrounding Mr Toyoda's move casts it as a response to Tesla. That is too Western-centric. Tesla may be the world's biggest EV producer and, according to Elon Musk, its boss, so far ahead of the competition that he cannot see the number two with a telescope. Yet it ignores a Chinese newcomer that, for all Mr Musk's bombast, Toyota no doubt takes as seriously as it does Tesla. It is BYD, which this year may overtake Tesla as the biggest global seller of pure EVs (not including hybrids, which it also makes). BYD is Toyota's EV partner in China as well as a rising competitor globally. More important, it emulates many of the traits that for decades have made Toyota the world's most successful car company.

Both East Asian firms share historical parallels. They did not start in the car industry. The company that gave rise to Toyota made automatic looms. BYD's inaugural products were batteries for mobile phones. From the outset, they were so far behind their global carmaking rivals that they looked to do things differently. In pre-war Japan, Toyota toyed with using charcoal as a fuel instead of petrol. BYD used its battery expertise to focus on EVs and plug-in hybrids, known in China as new-energy vehicles (NEVs). They both honed their skills domestically and when they went abroad started in relatively underdeveloped car markets.

Yet these tentative carmaking beginnings quickly developed a life of their own. In a six-year stretch from 1955 until 1961, Toyota's exports grew more than 40-fold and it has not looked back since. BYD says it took 13 years to manufacture its first million NEVs. It took a year to get to the second million. Six months later it reached 3m. It lists operations in dozens of countries and says it has production bases in places ranging from China to Brazil, Hungary, India and beyond. It makes electric buses in California's Mojave desert. It is now the world's second-biggest producer of lithium-ion batteries, behind CATL of China, as well as a maker of commercial vehicles, such as lorries and taxis, and electronic gadgets. These give it a bridgehead for global expansion.

It is on the factory floor and at the bottom line where things really matter, though. And here, too, BYD is what Tu Le of Sino Auto Insights, a consultancy, calls "the new Toyota". The Japanese firm has been the industry's manufacturing genius for decades; "The Toyota Way" is a combination of continuous improvement, or *kaizen*, lean manufacturing and unparalleled supply-chain management. BYD does things differently. It is one of the world's most vertically integrated companies, making everything from its own seats to batteries and semiconductors. But like Toyota, it is a model of efficiency. Mr Le uses a Silicon Valley term, GSD, to describe its manufacturing prowess. It stands for "Get shit done". Taylor Ogan, whose investment firm, Snow Bull Capital, has a stake in BYD, is awestruck by its level of automation. "The only humans you see in these factories are doing end-of-the-line inspections or fixing the robots. BYD has redefined auto manufacturing like Toyota did." Warren Buffett, an icon of American investing, is also a fan—and a big shareholder.

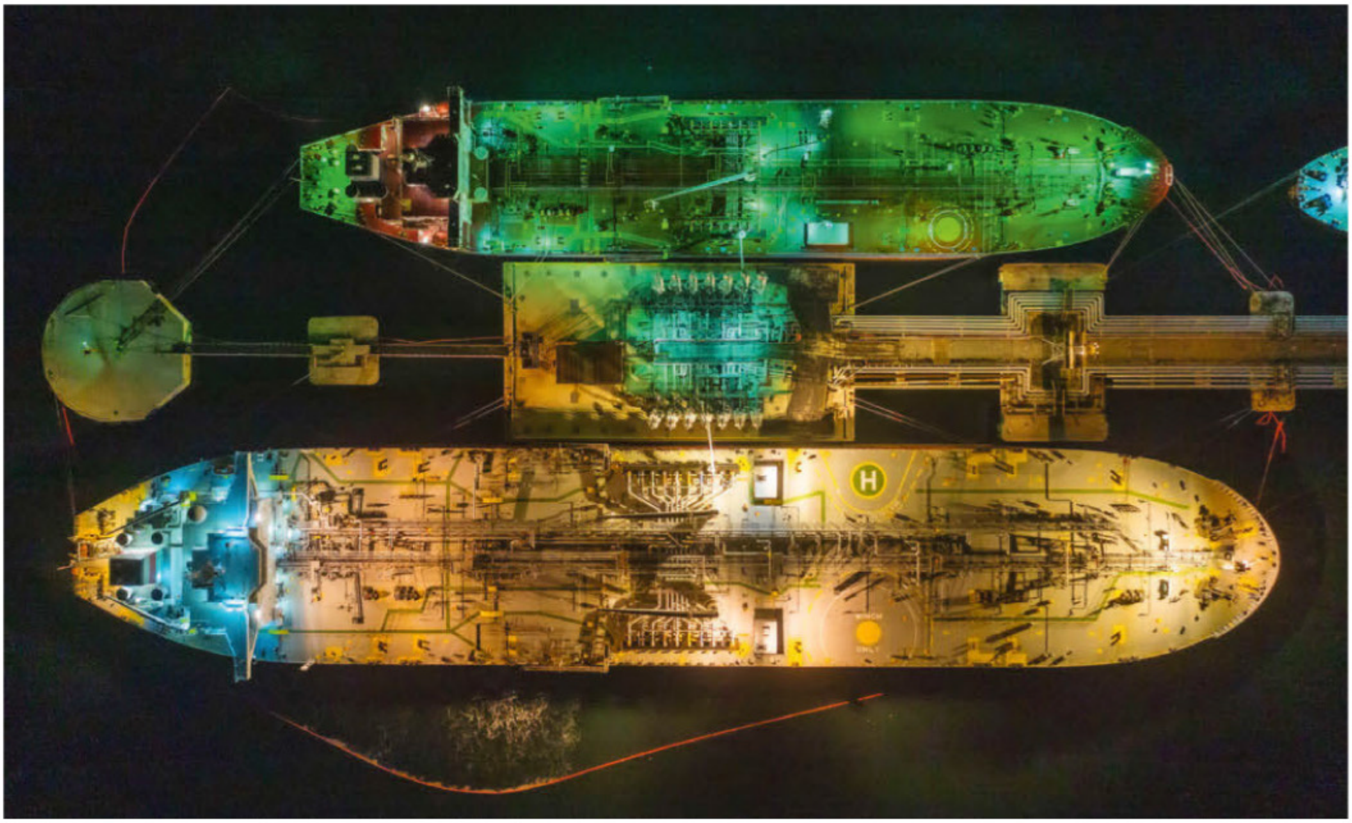
Efficiency is the engine oil of profitability. BYD gives out maddeningly little up-to-date information about its operations. But on January 30th it gave a preliminary estimate of net profit in 2022. At $2.4bn-2.5bn it was more than five times higher than in 2021. Based on this, Mr Ogan says his firm's calculations imply that in the past quarter the gross margin of BYD's auto business surpassed that of Tesla, hitherto the most profitable big carmaker. He believes this reflects the fact that BYD, whose bread and butter comes from building plug-in cars for the mass market, is increasingly selling higher-margin premium EVs. Unlike Tesla, it has a wide variety of ranges and styles, and brings out new models regularly.

The big unknown is America, where BYD currently sells no cars. It is not the first foreign carmaker to fear a backlash in the homeland of Detroit. Toyota, like other Japanese carmakers, fell victim to a US-Japan trade war in the 1980s. With Sino-American rivalry close to boiling point, the geopolitical pressures facing BYD are immense. It was expected to make a big inaugural splash at the Consumer Electronics Show in Las Vegas in January, but this did not happen. A big hurdle to entering America, says Mr Ogan, are the tariffs, dating back to Donald Trump's presidency, on Chinese-made EV components, such as batteries.

Build your defences

Eventually its launch in America seems inevitable. For all the geopolitical turmoil, American carmakers are so dependent on sales in China, the world's biggest car market, that they cannot afford to lobby against Chinese entrants at home, lest China shuts them out in response. Moreover, BYD may offer the sort of EVs that, at less than $40,000 a pop, will electrify the mass market. And, if all else fails, BYD can seek Toyota's help in cracking America, especially if their joint venture in China turns into a budding partnership.

For now, it is safe to assume that Toyota recognises as much of a challenge from BYD as it does an opportunity. Like Toyota, BYD doesn't shout about its strengths yet quietly delivers results. That is another thing that sets it apart from Tesla. ■



The economic war

Ships in the night

How Russia dodges oil sanctions on an industrial scale

In the year since the war in Ukraine began, once-dominant Western firms have pulled back from trading, shipping and insuring Russian oil. In their place, mysterious newcomers have helped sell the country's crude. They are based not in Geneva, but in Hong Kong or Dubai. Many have never dealt in the stuff before. The global energy system is becoming more dispersed, divided—and dangerous.

Russia's need for this alternative supply chain, present since the war started, became more pressing after December 5th, when a package of Western sanctions came into effect. The measures ban European imports of seaborne crude, and allow Russian ships to make use of the West's logistics and insurance firms only if their cargo is priced below $60 a barrel. More sanctions on diesel and other refined products will come into force on February 5th, making the new back channels more vital still.

The Economist has spoken to a range of intermediaries in the oil market, and studied evidence from across the supply chain, to assess the effect of the sanctions and get a sense of what will happen next. We find, to the West's chagrin and Russia's relief, that the new "shadow" shipping and financing infrastructure is robust and extensive. Rather than fade away, the grey market stands ready to expand when the next set of sanctions is enforced.

Russia's exports, which last year counted for more than 10% of globally traded volumes, took a hit after Europe's salvo in December. Two months on, though, they have recovered to levels last seen in June. The volume of oil on water, which climbs when the market jams up, is back to normal. As expected, China and India are picking up most of the embargoed barrels. Yet there is a surprise: the volume of cargo with unknown destinations has jumped. Russian oil, once easy to track, is now being moved through more shadowy channels.

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Some trade still uses the same Greek shippers, British insurers, and Dutch and Japanese banks that have long ruled the industry. This channel survives thanks to the price cap enforced by the West in December. That month, as European firms paused to consider the paperwork involved, the share of western Russian crude handled by them collapsed, from 60% to 13%. The legal trudge now done, the share has recovered to 36%. But it seems likely to drop off again. On January 1st the world's biggest reinsurers, which insure insurers, decided to no longer cover shipping from Russian ports. Western insurers must now either exit the business or pass on the extra costs resulting from the increased risk.

At the other end of the spectrum lies the "black" trade, tried and tested by producers such as Iran and Venezuela. Battered tankers as much as half a century old sail to clandestine customers with their transponders off. They are renamed and repainted, sometimes several times a journey. They often transit via busy terminals where their crude is blended with others, making it harder to detect. Recently, several huge tankers formerly anchored in the Gulf were spotted taking cargo from smaller Russian ships off Gibraltar. Oman and the United Arab Emirates (UAE), which imported more Russian oil in the first ten months of 2022 than in the previous three years combined, seem to have blended and re-sold some to Europe. Malaysia is exporting twice as much crude to China as it can produce. Much of it is probably Iranian, but ship-watchers suspect a few Russian barrels have snuck in, too.

As Russian firms can still sell oil legally to much of the world, this channel seems unnecessarily tedious. The share of exports flowing through it, though rising, is small. Instead, most of Russia's crude runs through grey networks which do not recognise the price cap but are not illegal, because they use non-Western logistics and deliver to countries that are not part of the blockade. These opaque, dispersed operations rely on three main pillars: a novel cast of traders, a vast and growing tanker fleet, and new sources of finance.

Shifty shades of grey

Russia's crude used to be sold overseas by the trading arms of Russian producers, those of Western oil majors and Swiss commodity merchants. These were mostly based in Geneva. But many of the former seem to have moved to friendlier locations. Robin Mills of Qamar Energy, a consultancy, reckons that more than 30 Russian trading outfits have set up shop in Dubai—some under new names—since the war started. As Western traders have withdrawn, newcomers have emerged to sell to India, Sri Lanka, Turkey and others. Most have no history of trading Russian oil, or indeed any oil; insiders suspect the majority to be fronts for Russian state firms.

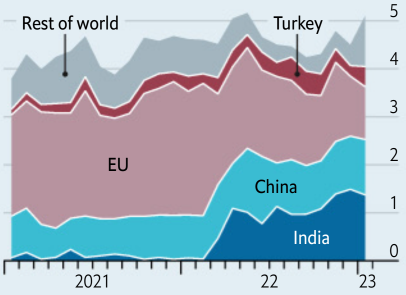
It is this curious group which orchestrates the sprawling grey fleet. Since the EU first considered sanctions on logistics, the second-hand tanker market has exploded. Last year nearly 200 crude-carrying vessels changed hands, some 55% more than in 2021, according to SSY, a shipbroker. Most were "Aframax" and "Suezmax" tankers: with a maximum capacity of 1m barrels, these are the only ships small enough to dock at Russian ports. Demand for Aframaxes has been so strong that a few recently sold for $35m—the average price China paid last year to buy much larger VLCCs, which can carry up to 2m barrels.

The fleet Russia can use to dodge the price cap now counts 360-odd ships, equivalent to 16% of the global crude tanker inventory. Were all Western ships to shun Russian crude barrels, the shadow fleet would be sufficient to keep Russia's crude exports flowing at current levels, says Reid l'Anson of Kpler, a data firm. But many of the ships are more than two decades old, and they are undertaking very long journeys. Whereas crude takes less than a week to travel from the Black Sea to Europe, it takes 45 days to reach China.

Euro no-go

Russia, crude-oil exports*

Barrels per day, m



Source: Kpler

*Includes CPC, a Kazakh-Russian blend

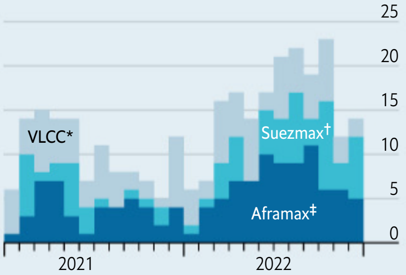
As business has boomed, the new middlemen have had to find financiers to bankroll and insure their operations. The ability to hold millions of barrels without putting up capital, by drawing on near-unlimited lines of credit from the world's biggest banks, has long been a crucial element of oil trading. In the case of Russian oil, which Western banks now shun, it is no longer possible. Instead, the shadow trade appears to be fuelled by credit from the Russian state, with the middlemen only paying for the cargo once they have collected the proceeds. Increasingly, banks in the Gulf are signing cheques too. Locals think they decided to step in when ADNOC, the UAE's state-owned energy giant, started receiving Russian crude in November.

Securing insurance has been trickier. Oil shippers do not just need to protect their cargo and vessels. Port authorities controlling passages such as the Bosporus strait also require protection and indemnity (P&I) insurance for the cost of harm ships may cause to people, property or nature. The liabilities from an oil spill can be so big that 90% of global P&I coverage is provided by clubs of shipowners, mostly in London, which pool premiums. Outside the West, no private market has the muscle to extend similar safety-nets, says Ulrich Kadow of Allianz, a German insurer.

Scrap market

World, sales of second-hand oil tankers

By size



Source: SSY

*Maximum 2m barrels †1m barrels ‡700,000 barrels

Yet here, too, solutions have been found. Since December, Russian firms, often new to the shipping business, appear to have stepped in to provide cargo and vessel insurance. Some P&I coverage, of equally questionable quality, is probably being offered by the Russian state. Insurance experts suspect some ports serving countries gorging on Russian crude—notably India—have lowered the level of coverage they require incoming tankers to have.

The grey trade has room to grow. China and India can buy more Russian crude: their tanks remain less than two-thirds full, according to Kayrros, a data firm, suggesting most of their purchases are being refined and resold—some to Europe—not stashed. On January 3rd China raised its refined-oil export quotas by nearly 50% compared with a year ago, notes Giovanni Serio of Vitol, a trading firm, perhaps as a prelude to buying more crude from Russia and selling the refined products abroad.

Incentives to follow the price cap may also weaken. In December Vladimir Putin issued a decree banning sales to parties that stick to the rule. The statement's language is weak, opening the door to exemptions; many think it will not be strictly enforced. But the ruling, which came into effect on February 1st, could still cause a few buyers to change their minds.

Tanker, sailor, soldier, spy

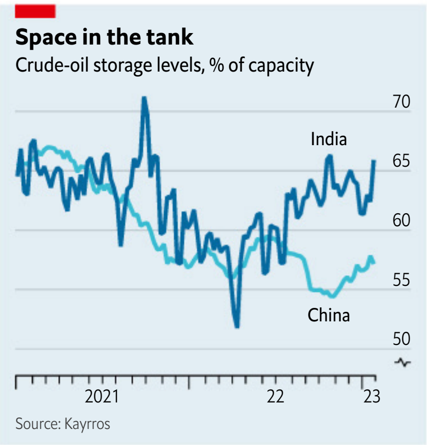
Price rises would alter the picture more drastically. Today Brent, the international crude benchmark, trades at $83 a barrel, down from an average of $100 last year. Russia's weak negotiating hand and high freight costs mean that its "Urals" grade crude was being discounted even before the price cap. As a result, a barrel of Urals, which flows from Russia's west and makes up most of its exports, sells for below the price cap of $60. This tepid market makes life easier for anyone who wishes to abide by the rules. Yet many analysts think a bounceback in Chinese demand, coupled with weak investment in new oil supply, could propel Brent back to $100 in the second half of 2023. In such a scenario, the Urals price would jump, too. Some buyers would probably turn to the shadow trade rather than face compliance headaches.

The next round of sanctions, on refined products, will also give a significant boost to the grey trade. In December Europe bought 1m barrels per day of diesel and other clean distillates, equivalent to 55% of Russia's exports. Now Russia will have to find new buyers. China and India have little demand for refined products, and the global market is fragmented. Therefore Russia's best bets may be the smaller markets of Brazil and Mexico, which will see ▸▸

their supplies dwindle as America exports more to Europe. Yet the fleet for carrying such products is small and the long journeys will worsen the shortage. All this suggests Russia will be unable to sell much of its refined oil, and will instead try to push as much crude as it can to the grey market.

For Russia, growth in the grey trade has advantages. It puts more of its export machine outside the control of Western intermediaries. And it makes pricing less transparent. Western estimates of Urals prices, based on few actual trades, are struggling to track costs. Indian customs data from November—the latest available—show the country bought oil at much lower discounts than those reported at the time, notes Sergey Vakulenko, a former Russian oil executive now at the Carnegie Endowment, a think-tank. Grey-market intermediaries, which capture costs such as freight, offer a conduit for funnelling money to offshore company accounts that the Kremlin can probably influence.

Meanwhile, Russia's sanctions-dodging will have nasty side-effects for the rest of the world. One will be to further split the oil trade along sharp geopolitical lines. In December several Western majors, including ExxonMobil and Shell, said they would no longer hire tankers that have carried Russian oil, forcing owners to take sides. The other will be to make oil trading a riskier business. A growing portion of the world's petroleum is being ferried by firms with no reputation, on ageing ships that make longer and dicier journeys than they have ever done before. Were they to cause an accident, the insurers may be unwilling or unable to cover the damage. Ukraine's allies have good reasons for wanting to wash their hands of Russian oil. But that will not prevent debris from nearby wreckages floating to their shores. ■



Space in the tank

Crude-oil storage levels, % of capacity

Source: Kayrros

Monetary policy

Seeking applicants:

TOKYO

For the nightmarish job of sorting out Japan's markets mess

KURODA HARUHIKO entered the Bank of Japan (BOJ) with a bang. Upon becoming governor in 2013, the former finance-ministry official fired a "bazooka" of easy money in an attempt to end decades of stagnation. The BOJ committed itself to buying vast amounts of assets and introduced negative interest rates in pursuit of a 2% inflation target. In tandem with the prime minister, Abe Shinzo, Mr Kuroda ushered in a new era of economic policy.

Mr Kuroda's term is ending explosively, too. Consumer-price inflation has been above the BOJ's target for nine months; it hit 4% in December, the highest level in 41 years. Officials have remained on the offensive—but the bank's policy of "yield-curve control", a cap on ten-year government-bond yields, is facing the fiercest counter-attacks since it was introduced in 2016. Mr Kuroda's successor, set to be announced in early February, must decide the future of the policy and maybe even oversee rate raises. This will require deft communication, impeccable timing and lots of luck. Missteps could see Japan's economy grind to a halt and a return to deflation. They could also roil global markets.

The first question for the new governor will be when to holster the bazooka. The BOJ's surprise decision in December to widen the trading band around ten-year bond yields, to allow more trading and improve the market's functioning, was seen as the start of the process. Predictably, speculators tested the target, forcing the BOJ to defend the cap. Since December 20th the bank has bought bonds worth a record ¥31.5trn ($243bn), taking its total holdings to ¥563trn, equivalent to more than 100% of GDP. At its meeting in January, the bank stood firm, but the fight is far from over. In a report on January 26th, the IMF urged more flexibility around the trading band.

Mr Kuroda is said to have returned from the World Economic Forum in Davos more confident than ever in the bank's doveish approach. The BOJ notes that higher import costs, in particular for energy and food, have driven Japan's inflation. These pressures may soon ease: energy subsidies will bring costs down; signs that global energy prices may have peaked and American inflation seems to have moderated give reason for caution. Most important, wage growth has failed to keep pace with price growth: real wages have declined for eight straight months. The bank reckons inflation will come down to 1.6% for the fiscal year beginning in April 2023 and will hit only 1.8% the following year.

Even a hawkish successor may wait until after this year's *shunto* (annual wage negotiations) before changing course. Japanese firms have long been reluctant to raise pay. But in the face of protracted inflation, leaders have begun to change their tune. Keidanren, Japan's business federation, has urged members to give consideration to rising prices. Some multinationals and big regional firms promise hefty pay increases. Fast Retailing, parent company of Uniqlo, a clothing giant, announced raises as high as 40%; Higo Bank, a lender in Japan's south, plans to lift base salaries by 3%, the first such rise in 28 years. The question is whether the smaller firms that employ 70% of Japanese workers will follow suit. In any case, BOJ officials reckon the costs of inflation overshooting are less than those of missing a historic chance to change Japan's inflation mindset.

The problem is that the costs of maintaining the current approach will only grow. The BOJ now owns 100% of some bond issuances, leaving traders facing shortages. Against expectations, the bank has found itself purchasing more bonds than before yield-curve control was introduced. Buying them at their current high prices means that the BOJ will probably make big losses on its portfolio, especially if it has to sell the bonds or raise short-term interest rates. Officials would like to exit yield-curve control gradually. That could mean expanding the band again, raising the ten-year target or shifting to targeting bonds of shorter maturities. In practice, this will be difficult. As the experience of exchange-rate pegs suggests, policy regimes can shift rapidly.

The BOJ also risks falling behind the inflation curve and having to tighten quickly. Any normalisation, much less a speedy one, will raise questions about Japan's fiscal health. Some economists see Britain's meltdown under Liz Truss as a cautionary tale, highlighting the importance of maintaining confidence in the government's bona fides. They worry about unknown unknowns in the financial system. Even so, the Japanese government has an-

We're hiring: *The Economist* is looking for a writer to cover international economics. Journalistic experience is not necessary. The ability to write clearly and entertainingly is crucial, as is a thorough understanding of economics. For more details visit economist.com/economics-job nounced plans to double military and child-care spending, without presenting a credible plan for financing these increases.

Who will inherit the mess at the BOJ? Three current or former deputy governors top most lists. Amamiya Masayoshi, right-hand man to Mr Kuroda, has overseen the bank's monetary policy for years. A classical pianist, Mr Amamiya would bring knowledge of the BOJ's sheet music. Nakaso Hiroshi, who served as deputy during the first half of Mr Kuroda's term, is a financial-markets expert. He helped fire Mr Kuroda's bazooka, but left thinking that monetary policy is no panacea, and that more structural reform is needed to raise Japan's growth rate. Yamaguchi Hirohide, who held the job under Mr Kuroda's predecessor, has been a fierce critic of ultra-loose policies. All three are seen as more hawkish than Mr Kuroda, but whereas Mr Amamiya and Mr Nakaso would represent a difference of degree, Mr Yamaguchi would be a difference of kind, signalling a cleaner break with the current regime.

The choice falls to Kishida Fumio, Japan's prime minister. His approval ratings have fallen recently, leaving him in a weaker position within the ruling Liberal Democratic Party. Nominating a figure hostile to "Abenomics", such as Mr Yamaguchi, would infuriate the powerful faction that Abe led. Whoever is chosen, though, faces a minefield. No candidate has led a central bank, let alone through a situation like that facing the BOJ. Tightening too much, too soon or waiting too long to act would be missteps with grave consequences. Perhaps that is why all three are said to have shown reluctance. As a government economic adviser whispers: "One job I would not want is the next BOJ governor." ■

Buttonwood Requiem for a meme

Fantasy finally meets reality on Wall Street

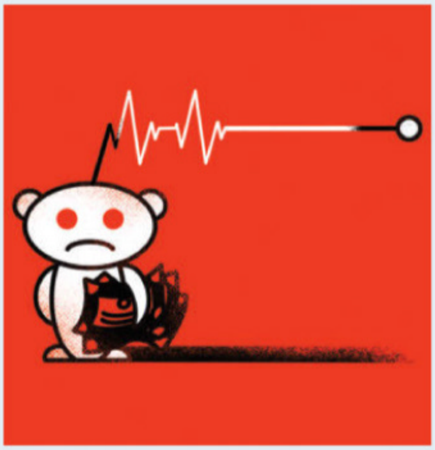
TWO YEARS ago the stockmarket was in the grip of speculative mania. Shares in GameStop, a struggling video-game retailer, hit an all-time intraday high of $483 on January 28th 2021, up from around $5 at the beginning of the month. Retail traders co-ordinated in a Reddit forum and snapped up shares using brokerage apps like Robinhood. Empowered by technology, newcomers piled into GameStop, ostensibly because the beleaguered chain was one Wall Street had heavily sold short (ie, bet that the firm's shares would fall in price). Short-sellers were the villains. When GameStop spiked they lost their shirts. What could be better?

The question at the time was how much of this would endure. Manias are as old as the hills, but this one seemed different: it was enabled by new technology that wasn't going anywhere. For a time, the GameStop crew were unstoppable. They pumped up prices for companies that had attracted interest from short-sellers, such as AMC, a cinema chain, and Bed, Bath & Beyond, a home-goods retailer. Battle-hardened short-sellers, including Andrew Left of Citron, a research firm, threw in the towel. Melvin Capital, a firm that had shorted GameStop, which the Reddit hordes made the cartoon villain of the saga, decided to close its doors in May 2022.

When interest rates are zero the price of a dream can be infinite. Higher rates change the dynamic. Last year was therefore rough on the meme-portfolio, but its fans are nothing if not resilient, even when making losses. Matthias Hanauer of Robeco, an asset manager, tracks the most heavily shorted stocks in the MSCI Developed Index, a benchmark of global shares. Since December 31st 2020, a month before GameStop shares peaked, they have underperformed the market by around 15 percentage points.

If 2022 was a reckoning with professional investors, then 2023 will be a reckoning with reality. A slowing economy is going to break many of the companies meme-stockers profess to adore. Monetary tightening slows the economy with a lag. As conditions worsen, struggling retailers, such as Bed, Bath and Beyond, are floundering. On January 26th the shower-curtain purveyor was served a slew of default notices by its bankers. Reuters, a newswire, has reported it may soon file for bankruptcy.

The end of more than a decade of rock-bottom interest rates is also beginning to reveal corporate misdeeds and sometimes outright fraud. "Capital was free for 12 years," says a former Wall Street tycoon. "We have no idea about all the places capital went that it should not have gone." Some initial pockets of misallocation have become apparent. The pricking of the bubble in cryptocurrency markets has exposed businesses including Celsius and FTX, the founders of which have been charged with defrauding their investors.



The stage is therefore set for the triumph of those the meme-stock lot profess to hate most of all: short-sellers, who try to sniff out this sort of stuff. Nathan Anderson, founder of Hindenburg Research and a famed short-seller, has already made quite a splash with an investigation into what he alleges is widespread fraud and market manipulation at the Adani Group, an enormous Indian conglomerate, which strongly denies the claims (see Business section).

What, then, is left of the retail era? Individual traders are more important than they used to be, even if they are far from the peak of their powers. In 2019 the retail share of stock-trading volumes hovered at around 15%. Then, in the first quarter of 2021, it peaked at 24%. This figure understated the true power of retail investors. Exclude marketmakers, who stand in the middle of most trades, and retail traders made up about half of volumes, with institutional investors accounting for the rest. Although retail traders' share fell to an average of 18% in 2022, or around one-third excluding marketmakers, this is still above where things started. When the stockmarket rallies, it is faddish favourites, like GameStop and Tesla, leading the charge.

Perhaps what will endure longest, though, is the levity. Investing is normally a serious business. But even as the hold-on-for-dear-life gang let go of their treasures and rethink their old grudges, their influence is still felt. There are already plenty of Hindenburg versus Adani memes on r/WallStreetBets, the Reddit forum where it all began. These echo the ones made about Melvin versus GameStop two years ago, with a small difference. This time Mr Anderson, the short-seller, is the hero.

Financial diplomacy

No relief in sight

China is paralysing global debt-forgiveness efforts

Given that his country is on the brink, Mohammad Ishaq Dar, Pakistan's economy minister, is strangely serene. In the week to January 20th, his government burned through a quarter of its dollar reserves, leaving $3.5bn to cover loan repayments and imports that will probably come to more than twice that in the first quarter of the year. Two days later ministers turned off the electricity grid to preserve fuel. Policymakers then abandoned a currency peg. The rupee plummeted, but Mr Ishaq Dar remained cool. Pakistan's prosperity, he said, is in God's hands.

Divinity usually takes the form of the IMF, provider of 21 bail-outs to Pakistan since 1960, or Western governments. But the global infrastructure for dealing with irresponsible and unlucky economies is in crisis. China's lending, growing for two decades, has reached a critical mass. Western financiers are in a stand-off with a lender too big to ignore but too irascible to involve in restructuring. Countries that have borrowed from China, and been battered by covid-19 and rising interest rates, are stuck in turmoil—few so firmly as Pakistan.

Before China's lending spree, Western countries built a framework to restructure troubled debts. Starting in 1956, lenders banded together on the basis that all would reschedule repayments on the same terms. Eventually debt forgiveness became the priority. This worked for as long as troubled countries mostly owed to the West. Now, however, at least half of the 38 countries which the World Bank counts as being in or near default have China as their biggest state creditor.

And China is refusing to play by the old rules. In an attempt to bring it into the fold, the G20 drew up a new set in 2020. Yet the "Common Framework" has turned out to be an empty agreement. In theory, signatories agree to accept similar restructuring terms. In reality, they have too little in common to get the process going.

Restructurings have all but disappeared since the pandemic. Four countries—Chad, Ethiopia, Ghana and Zambia—have asked for help under the framework. Only Chad has secured a deal, and it reschedules rather than cancels payments. Moreover, Chad's debts were slight ($3bn) and China's stake small ($264m, or 2% of Chad's GDP). In 2017 the World Bank calculated that the average low-income country owed China an amount equivalent to 11% of GDP, a figure which will only have risen.

China's refusal to accept write-downs is the main issue. The reluctance has drawn ire from the likes of David Malpass, president of the World Bank, and Janet Yellen, America's treasury secretary. Beijing's various ministries are simply not set up for forgiveness. In order to write off a loan, civil servants in policy banks must first get permission from the State Council, the equivalent of China's cabinet. If the borrowing country is not an ally, this is a risky manoeuvre. Being the face of a write down—in effect admitting that the bureaucracy made a mistake—is a professional stain that is hard to scrub. Rescheduling repayments leaves the mess for another day and someone else.

Another disagreement between China and the West reflects different perspectives. In the Common Framework's terms only loans by states are other states' business. Private creditors and international institutions get off more lightly, rarely being called upon to cancel a dollar. But China does not separate its political promises to develop the world's poorest countries from the country's commercial activities. One of the government's two main policy banks, China Development Bank, lends to poor countries at market rates. China is adamant that this disqualifies its loans from being bound by rules meant for states. Western lenders insist the opposite.

A final problem is that China would rather work alone. Co-operating with other lenders involves sharing information. This may be necessary occasionally when borrowers are in enough trouble to default on lots of loans at once. But wary of appearing too soft and encouraging more defaults, China prefers to do its negotiations in private. Since 2008 the Chinese state has restructured the finances of more countries (71) than all the members of the Paris Club of mostly Western countries put together (68), according to World Bank researchers, but it has done so on its own terms. Often it takes repayments in commodities, or their future proceeds. At other times borrowers hand over stakes in the infrastructure they have borrowed to build. Western creditors view the first as little better than extortion and do not have the option of the second, as most of their loans plug directly into borrowers' budgets.

Vested interest

So long as lenders are in a stand-off, the IMF is hamstrung. The organisation relies on countries to agree to bring down debts before it can risk a bail-out. This means officials are confined to tiny handouts for desperate borrowers. The deal it hopes to sort in Pakistan is worth $1.1bn—a drop in the country's $275bn debt ocean.

For years, Pakistan's friends, many of whom do not get along, have stumped up debt relief and emergency funding for their valuable geopolitical ally. As a result, Pakistan's politicians have come to expect last-minute miracles. But this time around China has not offered help. After suggesting a package, Saudi Arabia has gone quiet. The IMF cannot do all the work. Each party is tempted to leave the rescue to someone else. With many more countries on the brink of default, the stalemate could be a harbinger of doom for the rest of the world's distressed economies. ■

Inflation (1)

The doveish illusion

WASHINGTON, DC

Real rates are likely to rise even if the Federal Reserve stops tightening

THE "MONEY ILLUSION" ranks among the more lyrical-sounding concepts in economics. It refers to the mistake that people make when they focus on nominal rather than real values. Anyone chuffed to get a hefty pay rise over the past year without considering whether, after inflation, they can actually buy more has fallen prey to the illusion. Financial investors ought to be savvier, but they too can be seduced by a lovely nominal story. The Federal Reserve's downshift to smaller interest-rate rises is a case in point. It may look like a step away from hawkish monetary policy; in real terms, though, the central bank's stance is tighter than it first appears.

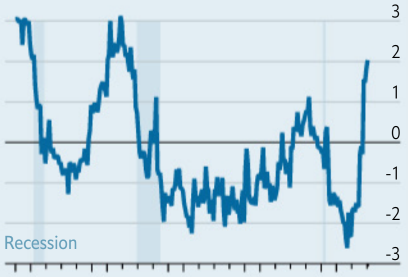
On February 1st the Fed raised rates by a quarter of a percentage point, taking short-term borrowing rates to a ceiling of 4.75%, as widely expected. This was half the size of its last increase, a half-point in December, which in turn was down from its previous string of three-quarter-point increases. The immediate question for investors is when the Fed will call it quits altogether. A narrow majority see the central bank raising interest rates by another quarter point next month and then stopping, as evidence mounts of cooling inflation. Even those more concerned by high inflation are pricing in, at most, an extra half-point of rate increases before the Fed stops. This is the light at the end of the monetary-tightening tunnel that has helped to fuel a stockmarket rally in recent weeks.

Yet what ultimately matters for the companies and households that need to borrow money is the real, not the nominal, rate of interest. Here, the outlook is a little more complicated—and almost certainly less rosy. Conventionally, many observers simply subtract inflation from interest to obtain the real rate. For example, with annual consumer-price inflation of 6.5% in December and the federal funds rate that month at a ceiling of 4.5%, the calculation would imply a real interest rate of -2%, which would still be highly stimulative.

This, however, reflects a basic mistake. Since interest is a forward-looking variable (ie, how much will be owed at some future date), the relevant comparison with inflation is also forward-looking (ie, how much will prices change by that same future date). Of course, no one can perfectly predict how the economy will evolve, but there are comprehensive gauges of inflation expectations that draw on both bond pricing and survey data. Subtracting one such gauge—the Cleveland Fed's one-year expected inflation rate—from Treasury yields produces a much steeper trajectory for rates. In real terms they have soared to 2%, the highest since 2007 (see chart).

Back to reality

United States, real one-year interest rate*, %



*Yield on one-year Treasuries minus one-year expected inflation

Sources: Federal Reserve; Federal Reserve Bank of Cleveland

Even after the Fed stops raising nominal rates, real rates will probably go on increasing for some time. Before covid-19 one-year expected inflation was about 1.7%. Now it is 2.7%. If inflation expectations recede towards their pre-pandemic levels, real interest rates would rise by as much as one additional percentage point—reaching a height that has always preceded a recession over the past couple of decades.

None of this is preordained. If inflation proves to be persistent this year, expectations for future inflation may rise, which would lead to a reduction in real rates. The Fed could end up cutting nominal rates sooner than it has forecast, as many investors predict. Some economists also believe that the natural, or non-inflationary, level of interest rates may have risen since the pandemic, implying that the economy can sustain higher real rates without suffering a recession. Whatever the case, one conclusion is clear. It is always better to stay grounded in reality. ■

Inflation (2)

A return to Hikelandia

Super-tight policy is still struggling to control price rises

IN OCTOBER WE examined the fortunes of Hikelandia. In this group of eight countries—Brazil, Chile, Hungary, New Zealand, Norway, Peru, Poland and South Korea—central banks have thrown the kitchen sink at inflation. They started raising interest rates well before America's Federal Reserve and on average have done so more forcefully, too. Yet we found little evidence that their determination was being rewarded with lower inflation. Hikelandia's experience raised questions about how quickly monetary policy can control prices. Policymakers at the Fed have been watching closely.

The latest data offer little reason for optimism. Hikelandia's inflation problems are still worsening. "Core" inflation excludes volatile components such as energy and food, and is thus a better measure of underlying pressure. In December this hit a new high of nearly 10% year on year (see chart). Higher borrowing costs are not yet crushing Hikelandia's inflation, but they are crushing its economy. Output is shrinking at an annualised rate of about 1%, down from growth of 5% early last year.

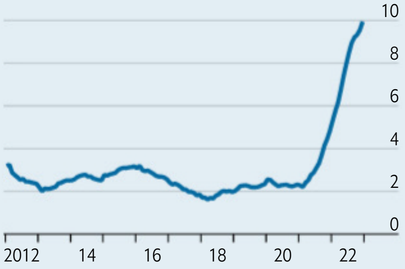
In some parts of Hikelandia central bankers are having more luck. Core inflation in Brazil is now clearly falling. There are signs of a turnaround in South Korea. Yet elsewhere there is less progress. In Chile average wages are growing by about 10% a year, far too fast when productivity growth remains weak. In Hungary prices are surging. Annual core inflation rose from 19% in August to 25% in December. We estimate that the prices of more than one-fifth of Hikelandia's inflation basket are rising, year on year, by a remarkable 15% or more.

When will prices in Hikelandia return to earth? Recent data suggest that it is unlikely inflation will move far into double figures. Yet the longer high inflation lasts, the more Hikelandia's citizens will come to expect it. Just ask Hungarians, many of whom are obsessing about the cost of living. They now search on Google for "inflation" as much as they do for "Viktor Orban".

How high is this mountain?

Hikelandia*, core consumer prices†

% increase on a year earlier



*Average of Brazil, Chile, Hungary, New Zealand (to Nov 2022), Norway, Peru, Poland and South Korea †Excl. energy and food

Sources: Haver Analytics; Refinitiv Datastream; *The Economist*

Free exchange | Amazing Inventions

How powerful new technologies, like artificial intelligence, transform economies

IT CAN TAKE a little imagination to see how some innovations might change an economy. Not so with the latest AI tools. It is easy—from a writer's perspective, uncomfortably so—to think of contexts in which something like ChatGPT, a clever chatbot which has taken the web by storm since its release in November, could either dramatically boost a human worker's productivity or replace them outright. The GPT in its name stands for "generative pre-trained transformer", which is a particular kind of language model. It might well stand for general-purpose technology: an earth-shaking sort of innovation which stands to boost productivity across a wide-range of industries and occupations, in the manner of steam engines, electricity and computing. The economic revolutions powered by those earlier GPTS can give us some idea how powerful AI might transform economies in the years ahead.

In a paper published in 1995, Timothy Bresnahan of Stanford University and Manuel Trajtenberg of Tel Aviv University set out what they saw as the characteristics of a general-purpose technology. It must be used in many industries, have an inherent potential for continued improvement and give rise to "innovational complementarities"—that is, induce knock-on innovation in the industries which use it. AI is being adopted widely, seems to get better by the day and is being deployed in ever more R&D contexts. So when does the economic revolution begin?

The first lesson from history is that even the most powerful new tech takes time to change an economy. James Watt patented his steam engine in 1769, but steam power did not overtake water as a source of industrial horsepower until the 1830s in Britain and 1860s in America. In Britain the contribution of steam to productivity growth peaked post-1850, nearly a century after Watt's patent, according to Nicholas Crafts of the University of Sussex. In the case of electrification, the key technical advances had all been accomplished before 1880, but American productivity growth actually slowed from 1888 to 1907. Nearly three decades after the first silicon integrated circuits Robert Solow, a Nobel-prizewinning economist, was still observing that the computer age could be seen everywhere but in the productivity statistics. It was not until the mid-1990s that a computer-powered productivity boom eventually emerged in America.

The gap between innovation and economic impact is in part because of fine-tuning. Early steam engines were wildly inefficient and consumed prohibitively expensive piles of coal. Similarly, the stunning performance of recent AI tools represents a big improvement over those which sparked a boomlet of AI enthusiasm roughly a decade ago. (Siri, Apple's virtual assistant, was released in 2011, for example.) Capital constraints can also slow deployment. Robert Allen of New York University Abu Dhabi argues that the languid rise in productivity growth in industrialising Britain reflected a lack of capital to build plants and machines, which was gradually overcome as capitalists reinvested their fat profits.

More recent work emphasises the time required to accumulate what is known as intangible capital, or the basic know-how needed to make effective use of new tech. Indeed, Erik Brynjolfsson of Stanford University, Daniel Rock of the Massachusetts Institute of Technology and Chad Syverson of the University of Chicago suggest a disruptive new technology may be associated with a "productivity J-curve". Measured productivity growth may actually decline in the years or decades after a new technology appears, as firms and workers divert time and resources to studying the tech and designing business processes around it. Only later as these investments bear fruit does the J surge upward. The authors reckon that AI-related investments in intangible capital may already be depressing productivity growth, albeit not yet by very much.

Of course for many people, questions about the effects of AI on growth take a back seat to concerns about consequences for workers. Here, history's messages are mixed. There is good news: despite epochal technological and economic change, fears of mass technological unemployment have never before been realised. Tech can and does take a toll on individual occupations, however, in ways that can prove socially disruptive. Early in the Industrial Revolution, mechanisation dramatically increased demand for relatively unskilled workers, but crushed the earnings of craftsmen who had done much of the work before, which is why some chose to join machine-smashing Luddite movements. And in the 1980s and 1990s, automation of routine work on factory floors and in offices displaced many workers of modest means, while boosting employment for both high- and low-skilled workers.

Gee, Pretty Terrific

AI might well augment the productivity of workers of all different skill levels, even writers. Yet what that means for an occupation as a whole depends on whether improved productivity and lower costs lead to a big jump in demand or only a minor one. When the assembly line—a process innovation with GPT-like characteristics—allowed Henry Ford to cut the cost of making cars, demand surged and workers benefited. If AI boosts productivity and lowers costs in medicine, for example, that might lead to much higher demand for medical services and professionals.

There is a chance that powerful AI will break the historic mould. A technology capable of handling almost any task the typical person can do would bring humanity into uncharted economic territory. Yet even in such a scenario, the past holds some lessons. The sustained economic growth which accompanied the steam revolution, and the further acceleration which came along with electrification and other later innovations, were themselves unprecedented. They prompted a tremendous scramble to invent new ideas and institutions, to make sure that radical economic change translated into broad-based prosperity rather than chaos. It may soon be time to scramble once again. ■

Haptics

Machine guns ready to go!

Virtual reality's hands-on future

THE BRAVE NEW WORLD Aldous Huxley describes in his novel of that title features the "feelies". In 1932, its year of publication, movies were turning into talkies. Feelies must have seemed a logical, if creepy, extension of that. The book alludes to a film at a local theatre with a love scene on a bearskin rug, in which the sensation of every hair of the bear is reproduced.

The feelies have still not arrived. But people are working on them. In computer games and virtual reality (VR), two heirs to cinema's role in light entertainment, practitioners of the discipline of haptics are attempting to add a sense of touch to those of vision and hearing, to increase the illusion of immersion in a virtual world. In future, they hope, if you reach out to pluck an apple from a tree in such a paradise, your hand will no longer go through it. You will, rather, be able to feel and grasp the fruit, if not actually eat it. Conversely, if it is a paradise lost you are in, and a baddy hiding behind the apple tree shoots you, you will feel the bullet's impact.

To experience all this a user will wear haptic clothing. The ambitious talk of whole-body haptic suits, but in the case of the apple, the tree and the gunman haptic gloves and a haptic vest would suffice. Moving a gloved hand creates corresponding movement of a user's virtual hand, with sensations appropriate to objects "touched" being fed back via devices called haptic actuators, incorporated into the glove. Haptic vests similarly stimulate parts of the upper body.

Hand in glove

Actuators themselves come in a variety of forms. Those most widely used at the moment are ERMS (eccentric rotating masses) and LRAS (linear resonant actuators). An ERM is a tiny motor that drives a shaft fitted with an off-centre weight which causes the whole thing to vibrate when the shaft spins. An LRA uses an electromagnetic coil to shake a surface. Nowadays, these devices are employed for jobs like alerting smartphone users to incoming messages and reacting when a touchscreen is tapped. But adapting such well-understood technologies for use in VR and gaming should be fairly easy.

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ERMS and LRASS are not, however, the only possible approaches to immersive haptics. For instance, OWO Game, a Spanish firm, is about to put on sale a haptic vest, worn next to the skin, that relies on electrical stimulation rather than vibrating actuators. It delivers tuneable levels of current to different parts of the torso. Besides creating tingling sensations, these can also cause muscles to contract. Effects replicable using this approach apparently include being shot, stabbed and blown up.

In Redmond, Washington, meanwhile, a firm called HaptX has reached for pneumatics, a technology many might think had seen its heyday. Bob Crockett, one of the company's founders, explains that the firm needs compressed air to produce a big enough displacement of the skin to effect a realistic sensation of touch. Other haptic devices, he says, cannot do that.

HaptX's gloves, branded G1, have their air pumped in and out through a network of tubes which inflate or deflate 135 tiny balloons incorporated into each glove. The most sensitive of these balloons—those in

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the finger tips—are less than 1mm in diameter. The gloves' fingers also include pneumatic "exotendons", which brake the fingers' movement, thereby simulating the feeling of touching a solid object. The compressor and electronics powering the system are held in a backpack, so a user can move around freely.

None of this will be cheap. A pair of G1 gloves will set you back at least $4,500. The initial market, though, is corporate, rather than retail. Early customers are expected to include organisations that already use VR for training and want to improve the experience: medical schools teaching operating techniques to surgeons, for example, or workshops that repair jet engines. Another use might be to permit collaboration between engineers living in different parts of the world. People working on a new car, say, could meet in a virtual laboratory, tinker with virtual components, and pass around virtual copies of their designs.

There is, though, a further reason why HaptX has chosen pneumatics: it does not intend to stop at making gloves. It has plans for a whole-body haptic suit and thinks pneumatic actuation will be easier to scale up than something based on electric motors. It is cagey about details, but users would don an exoskeleton that could create sensations all over the body—including forces that pull a user's hands downward, so he or she would feel the weight of virtual objects.

Unvested interest

VR and gaming are the high end of haptics. But ways of improving haptic feedback in the non-virtual world are important, too. Smartphones, computers and the touchscreens now proliferating in vehicles, fast-food venues and so on could all benefit from a bit of haptic feedback.

Aito, a firm based in Amsterdam, hopes to provide just that. It produces haptic systems for laptops and other digital devices. These employ actuators based on piezoelectric materials, which shrink or expand in response to a voltage, producing a slight movement. And the process works in reverse, as well. When squeezed, a piezoelectric crystal generates a current. This means piezo materials can be employed both as actuators and as sensors.

Aito's actu-sensors have three layers. Their covers are plastic, glass or even wood. Below lies a capacitance grid, which determines, from the change created in the grid's electric field, the position of a finger touching the device. The third layer is a matrix of piezo activators. All three combine into something barely 1.8mm thick that can be incorporated into touchscreens and touch pads.

When an actu-sensor detects a finger it responds appropriately, according to the position and pressure of the digit in question. It might create clicks. Or rumbles. Or form the screen's upper layer into a stable but scratchy surface that would cause a finger or a plastic stylus to feel like a fountain pen gliding over paper, or like a brush painting on canvas.

With the introduction of portable devices that have foldable screens, the lower half might thereby be used as a haptic keyboard. It could be programmed to provide a tactile response like that of a mechanical keyboard, but with additional features, says Nedko Ivanov, Aito's boss. For instance, pressing down harder would capitalise a letter, doing away with the need for a shift key.

This would also allow devices to be slimmer and lighter. And the same machine could be sold in different places without having to modify its hardware, for a screen-based haptic keyboard could be programmed to use whatever character set was appropriate to the local language.

Some of these new features will work

Electronics

Pixels in your eye

Making VR displays more realistic

TO ENTER A virtual environment, users must don a set of VR goggles (see picture). Typically, these contain a pair of stereoscopic lenses and a light-emitting diode (LED) display screen. The lenses distort the image on the screen so that it appears to be in three dimensions. And various sensors in the goggles track the position of the user's head, to co-ordinate that with what is being viewed.

A group of researchers based at the Massachusetts Institute of Technology (MIT), along with colleagues at universities in France, South Korea and other parts of America, have come up with a way of arranging LED pixels to produce screens with a much higher resolution than is currently possible. As they report this week in *Nature*, their technique could be used to make VR images that appear far more lifelike than today's. "You could have a completely immersive experience and wouldn't be able to distinguish virtual from reality," claims Jiho Shin, one of the team's members.

Goggle box

To generate displays with higher and higher resolution, LED pixels have been getting smaller and smaller. But this makes them ever harder to manufacture reliably. Some in the industry think a practical limit will soon be reached. Yet smaller pixels are especially valuable for improving screens that are viewed up close, as with a VR headset. Insufficient pixel density can result in unwanted optical illusions, such as perceived stripes in the image.

At present, LEDS are made like silicon chips. The red, green and blue versions required for a full range of colours are grown on different wafers, then cut out and placed side by side, with microscopic precision, to form pixels. Misalignment leads to rejection. And the smaller the LED, the greater the chance of misalignment. Today's LEDS can be pretty small (less than 100 microns across). But gogglemakers would prefer something far tinier than that.

Dr Shin and his colleagues think they can turn out such minuscule LEDS by going about things differently. They grow their diodes directly on reusable wafers of silicon and other materials to produce a single-crystalline membrane. These membranes can then be peeled away, stacked one on top of another like layers of a cake, and cut into patterns of tiny vertical pixels, each as little as four microns across.

As with conventional side-by-side LEDS, the team's vertical ones yield a full spectrum. The result should be perfect for VR goggles. And screens for goggles could just be the start. Now that televisions come in curved and foldable forms, they, too, might be used to surround a viewer in a virtual environment. One day, perhaps, stacked micro LEDS might even take the immersive experience to the silver screen of cinema itself.

their way into cars, too—especially as conventional dashboard switches are replaced more and more by icons on a screen. Without a satisfying mechanical click, it can be hard to tell, without taking your eyes off the road, whether such icons have been activated or deactivated.

And there is also one other potentially big use for haptics. Pornographers were early pioneers of the internet (and, indeed, of film and photography before that). So it is hardly surprising a number of them are now working on virtual-sex encounters—known in the trade as "teledildonics". Some companies producing sex toys, for example, have already begun adding Bluetooth-enabled items to their range, allowing couples to link up remotely, as it were. Perhaps Huxley wasn't so far off the money after all. ■

Ornithology

Birds of mode

For tits, it seems important that their nests are trendy

Humans are not the animal kingdom's only fashionistas. Tits can be fashion-victims, too, apparently. A study published in *Behavioral Ecology and Sociobiology* by Sonja Wild and Lucy Aplin of the Max Planck Institute for Behavioural Biology, in Radolfzell, Germany, shows that, given the chance, they decorate their nests with this season's must-have colour.

Dr Wild and Dr Aplin were following up work published in 1934 by Henry Smith Williams, an American naturalist. He noticed that when he put various coloured balls of yarn out in his garden, almost always one and only one became popular that season for incorporation into local birds' nests. But which particular hue was favoured varied from season to season. This suggested that the colour chosen by one of the early birds was spotted and copied by others.

Williams's work was, however, forgotten until Dr Wild and Dr Aplin came across it while following up on a different study, published in 2009 by a team at the University of Toulouse. This group noted that, during any given breeding season, the blue tits they were investigating tended to incorporate the same herbaceous plants into their nests regardless of how abundant those herbs actually were. This, too, suggested fashion-following—and it likewise led Dr Wild and Dr Aplin to speculate that birds were studying the nests of others and copying them. They therefore set out to rerun Williams's experiment, but this time to collect some actual numbers.

The birds they followed were part of a well-monitored population of blue, great and marsh tits in a wood near the institute. Most birds in this wood carry transponders fitted to them after their capture in mist nets. That allows the institute's researchers to keep track of a vast number of individuals by logging their arrival at food dispensers scattered throughout the wood.

One day in March 2021 Dr Wild, Dr Aplin and their collaborators deployed five RFID-enabled dispensers loaded with wool rather than food. Each contained strands of two colours—either orange and pink or blue and purple—but all were rigged to dispense only one of these. This remained so until at least one local nest was seen to include wool from a dispenser. At that moment, the other colour was made available, too. As a control, Dr Wild and Dr Aplin set up, in a separate area, four further wool-dispensers, each of which provided two colours from the get-go.

Of 68 tits' nests built that season in the experimental areas, 26 included wool from a dispenser. Of these, 18 were constructed after both colours had become available from all dispensers. Even so, ten of that 18 included only the colour of wool first chosen by a nestbuilder. By contrast, all eight wool-bearing nests in the control zone contained a mixture of colours—a statistically significant difference.

Tits, then, do seem to be "on trend" when it comes to nest-building materials. Why that should happen remains obscure. Dr Wild and Dr Aplin suspect the trendsetters are older birds, and that evolution favours younger ones copying their elders since those elders have evidently survived what fortune has to throw at a tit. Williams's original work, though, suggests such initial choices are arbitrary. A bit like those of the leaders of human fashions. ■

We're terribly House and Garden at No. 7B

Brain scans and politics

The blue and the red

People with different opinions process political information differently

That those who lean to opposite ends of the political spectrum think differently from each other is obvious. That such differences show up in brain scans is intriguing. Brain scanning is a low-resolution approach to studying neural activity, incapable of seeing how the cells which do the actual thinking are connected to each other. Yet, using this fairly crude technique, two groups of researchers now claim to be able to distinguish the neural responses of left- and right-wingers.

Daantje de Bruin and Oriel FeldmanHall, of Brown University, in Rhode Island, published their study in *Science Advances*. Noa Katabi and Yaara Yeshurun of Tel Aviv University, in Israel, chose the *Journal of Neuroscience*. Both used functional magnetic-resonance imaging, which measures changes in blood flow as a proxy for neural activity, to look at groups of 44 and 34 volunteers respectively, from across the political spectrum.

Ms de Bruin and Dr FeldmanHall first asked their volunteers to read a list of words—some politically charged, some not—while lying in the scanner. For each word, they recorded activity patterns in the amygdala (which handles aspects of the emotions) and the striatum (which handles aspects of cognition). Neutral words showed no difference. But for words related to "immigration" and "American" the activity patterns in the striatum clustered according to participants' politics.

Next, they asked people to watch a neutrally worded news clip on abortion and also heated debates on policing and immigration. Patterns of activity stimulated by the news clip were indistinguishable between left- and right-wingers, but those generated by the immigration debate (though, surprisingly, not by the policing debate) clearly divided them.

Ms Katabi and Dr Yeshurun, by contrast, went straight for videos. They asked participants to watch campaign ads and speeches, and a neutral clip. They found differences in the responses to politically charged material of parts of the cortex that deal with vision, hearing and movement. Moreover, unlike Ms de Bruin and Dr FeldmanHall, who merely noted correlations, they said they could predict an individual's political views from the scan. Not quite Big Brother in 1984, yet. Getting someone to lie still in a scanner is a palaver. But surprisingly close. ■

Democracy and its discontents

What lies beneath

A distinguished commentator analyses the West's malaise. His bleak assessment is oddly comforting

The Crisis of Democratic Capitalism. By Martin Wolf. *Penguin Press; 496 pages; $30. Allen Lane; £30*

FOR ANYONE old enough to remember the fall of communism, recent history has been something of a shock. The triumph of liberal political and economic systems has been spoilt: by rich-country blunders, the rise of authoritarian China, and ultimately by a distressing loss of faith in democracy itself in what was once called the free world. This crisis of democracy looks less dire than it did a year or two ago, thanks to political change in America and missteps by China and Russia. But the danger has not passed, and the need to understand democracy's retreat remains urgent.

Martin Wolf is well-placed to interpret it. A dean of financial journalism, he has for decades been the chief economics commentator of the *Financial Times*. "The Crisis of Democratic Capitalism" draws on the wisdom accumulated over his distinguished career—and argues that most of the blame for the democratic recession belongs to a record of dismal economic performance. The case he makes is authoritative and compelling. Yet in the end it is not fully convincing.

Mr Wolf's review of recent history will jolt even the well-informed. Governments of all sorts have become less accountable to the public. Authoritarian states have grown more oppressive; some strong democracies have wobbled; weaker ones have crumbled. And the opportunism of strongmen is far from the only cause.

Surveys suggest ordinary people have become less enamoured of representative government. Over 60% of Americans born in the 1940s say it is "essential" to live in a democracy, but scarcely more than 30% of those born in the 1980s think the same, according to one study. Data published in 2020 show that, among the roughly 1.9bn residents of democracies, less than a quarter live in countries where most voters are satisfied with that system of government.

For Mr Wolf, this loss of faith—and the accompanying retreat from democracy—are rooted in decades of economic failure. On its face, that seems a very reasonable argument. Since the early 1980s, income and wealth inequality have risen dramatically in many countries; in America, for instance, the share of pre-tax income earned by the top 1% has nearly doubled by some counts, from about 10% to 19%. In rich economies growth in productivity and in the inflation-adjusted incomes of the typical household has been disappointing. Deindustrialisation has left many working-class cities permanently depressed.

The shock of the global financial crisis of 2007-09 turned the accumulating discontent into seething anger at governing elites and a loss of trust in the system. Mr Wolf does not deny that racism, migration and cultural anxieties fuelled disillusionment with democracy. But he thinks such factors could only sway elections in a climate of weakened trust in elites, fed by economic failure—a similar dynamic, he says, to that which empowered the Nazis.

The book's account of how things have gone wrong economically is thorough, and its policy recommendations are detailed and broadly sensible. Though Mr Wolf is

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willing to entertain some mildly unorthodox suggestions—he reckons a job guarantee is worth a look—he acknowledges that this is not a time for revolution. What is needed, he writes, is avowedly incremental change: shoring up the safety-net, boosting competition, preserving global trade. Overall, the book's assessment is strangely comforting. It reassures readers that what has gone wrong is known, and all that is needed to repair the situation is a bit of competent technocracy.

But desirable as comfort may be—and, for that matter, competent technocracy—it is hard to shake the feeling that something more profound has happened to the world's great democracies. If economic woes and elite failure are the problem, why did the trouble not develop sooner? The 1970s were a time of galloping inflation, deep recessions, soaring crime and other social ills, terminating in the punishing, industry-gutting downturns of the early 1980s. Yet democracy seemed secure.

The global financial crisis was indeed a shock, and the vote shares of populist parties clearly soared in its immediate aftermath. But the links between economic pain and populism, and between populism and democratic decline, are not simple and automatic. Greece suffered terribly in the 2010s, but the vote share of the fascist Golden Dawn party peaked at a mere 7%. When they won office, the Greek populists of Syriza governed like normal European leftists. Or consider a counterfactual: had Bernie Sanders, another left-wing populist, succeeded in becoming America's president in 2017, he would doubtless have made many mistakes. But it seems unlikely that he would have threatened the country's democratic institutions.

The missing links

A comparison of the current woes with those of the first half of the 20th century is especially clarifying. Germany lost a war, millions of men, an empire and a currency. At the height of the Depression, a quarter of its labour force was unemployed. The rich world, in recent decades, has had painful recessions. But it has met them with macroeconomic policy and social safety-nets far better than those of the 1930s. Inequality has not risen much since 2000. Other than in a few places, median incomes have grown, if sluggishly.

Yes, the 21st century has been troubled and governments have erred. For all that, when Donald Trump was elected in November 2016, America's unemployment rate was just 4.7%. If such venerable democracies are at risk, other corrosive forces must surely have conspired with the economic trends to make them so.

Precisely what those forces are is a question that haunts the democratic world. You could point to complacency over the internet's capacity to spread ugly ideas, or the way in which globalisation has sometimes strengthened links between countries while eroding bonds within them. Progress itself is to blame, according to some analyses: the spiritual emptiness left over after material needs are met (and rival ideologies defeated) has driven some in the West to seek meaning and community in dangerous places.

Where Mr Wolf is undoubtedly right is in his grim assessment that democracies, even old and proud ones, can fall. Preventing them doing so may mean thinking beyond the comfort zone. ■

The Cultural Revolution

Bad memories

Red Memory. By Tania Branigan. *W.W. Norton; 288 pages; $29.95. Faber & Faber; £20*

At first glance Zhang Hongbing is deserving of pity. In the 1960s, while still a teenager, he watched his father being beaten until his urine ran red. The older man, a veteran of China's Communist Party, had been accused of being a capitalist. Then Mr Zhang's mother, Fang, fell under suspicion. She was branded a counter-revolutionary and later executed.

Such horrors were not uncommon during China's Cultural Revolution, a decade of Maoist madness that began in 1966. Gangs of Red Guards, whipped up by Mao Zedong, persecuted those deemed too capitalist, traditional or reactionary. Frenzied young people led the initial charge, though the fighting between rival adult factions was more deadly. In all, as many as 2m people were killed in the upheaval; the lives of many millions more were ruined.

Daughters of the revolution

What makes the death of Fang stand out is that her husband and son had themselves been her accusers. Mr Zhang tells Tania Branigan, the author of "Red Memory", that he saw his mother as a "monster" after she insulted Mao. Father and son then left to report her, probably knowing she would be killed. Today Mr Zhang is repentant. Yet his memory seems odd: "He existed in it not as a human who loved and feared and doubted, but as a Maoist algorithm: inputs, rules, outputs."

How people remember that horrible decade—or why they have forgotten it—is the underlying theme of this penetrating and perceptive book. Ms Branigan has spoken to those who experienced the revolution as victims, perpetrators or both. Mr Zhang is more open than most Chinese. Some have been silenced; some fear repercussions. "Others hush as if it were a curse, so powerful that its very mention darkens current peace and prosperity," writes the author. "And so the party and those it rules have conspired in amnesia."

Under Mao's successor as paramount leader, Deng Xiaoping, the party admitted the Cultural Revolution was a "catastrophe". Deng himself had been purged—twice. His resolution stated: "It is impermissible to overlook or whitewash mistakes, which in itself would be a mistake and would give rise to more and worse mistakes." It attacked Mao's personality cult and tyrannical style. Around the same time, books about the trauma, called "scar literature", appeared. This was the closest China has come to a reckoning.

China's current leader, Xi Jinping, was also a victim. His father, who had fought alongside Mao in China's civil war, was persecuted. His half-sister reportedly killed herself during the period. Mr Xi himself was sent to live in a cave in the countryside for seven years. Today the party paints this as a formative experience, one that turned Mr Xi into a man of the people. That is in keeping with his attacks on "historical nihilism". China's online censors have deleted millions of posts containing "harmful" discussion of the past.

Mr Xi was disgusted by the chaos of the Cultural Revolution. But his version of party history, produced in 2021, removes references to Deng's verdict and his warnings about one-man rule. Mr Xi has accumulated more power than any leader since Mao and created his own cult of personality. The Cultural Revolution's legacy is thus more relevant than ever, writes Ms Branigan. But, she notes, there is "an inverse relationship between utility and acceptability: what makes the era's lessons so vital is also what makes them impermissible." ■

HOME ENTERTAINMENT

Prophetic cinema

The future is now

Released 50 years ago, "Soylent Green" is an unnerving vision of today

In his later years, Charlton Heston was known as the Reaganite president of the National Rifle Association. But as a younger actor he was a Democrat and a civil-rights activist. He starred in three dystopian science-fiction films, the messages of which are positively left-wing. They all warn of the catastrophic damage that humans can do to the environment.

The first and best of these was "Planet of the Apes" (1968), which ended (spoiler alert) with the revelation that civilisation had been destroyed in a nuclear war. In "The Omega Man" (1971), civilisation had been wiped out again, this time by biological warfare. In "Soylent Green"—released 50 years ago, in 1973—civilisation is hanging on, but the situation is precarious.

Pollution and overpopulation have ravaged the natural world, resources are scarce and climate change has brought on "a heatwave all year long". The unnerving part is that the story is set in 2022. It is impossible to watch the film today without weighing up how accurate its predictions turned out to be.

Loosely based on "Make Room! Make Room!", a novel of 1966 by Harry Harrison, "Soylent Green" is a melancholy conspiracy thriller written by Stanley Greenberg and directed by Richard Fleischer. Heston stars as Robert Thorn, a hard-bitten police detective in New York who shares a cluttered flat with his sweet old assistant, played by Edward G. Robinson in his final role (he died before the film was released).

A murder investigation takes Thorn to a plutocrat's spacious apartment in a fortress-like complex, where he encounters items that, in the world of the movie, are luxuries: soap, fresh apples and, most excitingly of all, air conditioning. "We'll make it cold like winter used to be," coos the apartment's live-in courtesan (Leigh Taylor-Young). The inquiry also takes Thorn towards the truth about Soylent Green, a tasteless foodstuff. It is supposedly made from plankton, but, given that the oceans have been despoiled, it is not.

Considering it was set five decades in the future, "Soylent Green" is remarkably unfuturistic. There are no spaceships or laser guns, just miserable figures shuffling around a dingy brown metropolis. For most people around the world, city life in 2022 was nicer than it is in the film-makers' imagination, the pandemic notwithstanding. But some elements are too close to reality for comfort: the enmeshing of politics and big business, the separation of rich and poor, and the clashes between the masses and the heavily armed riot police. The relentless, sticky heat may be familiar to modern viewers, too.

The film's most daringly cynical touch is that New York's citizens are resigned to the way things are. Nobody thinks that nature might one day recover. Nobody rebels against the corrupt system. Indeed, Thorn himself is happy to be a part of it, as long as he can supplement his income by accepting a few bribes and pilfering a few treats from crime scenes. In its own way, the complacency of the populace in "Soylent Green" is scarier than the mutants in "The Omega Man" and the tyrannical gorillas in "Planet of the Apes". ■

Transatlantic histories

Return of the natives

On Savage Shores. By Caroline Dodds Pennock. *Knopf; 320 pages; $32.50. Orion; £22*

In recent decades indigenous people around the world have fought to rebuild cultures wrecked by colonialism, invoking a common phrase: "We are still here." From protests against oil pipelines to bids to reclaim land, and from the revival of native cuisines to indigenous stories on screen, a renaissance is refuting the tired view that these cultures are vanishing.

According to Caroline Dodds Pennock's absorbing account of indigenous peoples in 16th-century Europe, their roles in earlier history have been simplified or erased, too. "On Savage Shores" shatters the Eurocentric assumption that, half a millennium ago, people and ideas flowed in only one direction, from the old world to the "new". Her study painstakingly reconstructs the first century of contact between colonial powers and the peoples of the Americas, documenting thousands of natives who travelled east, often involuntarily, to a continent they considered no less "savage" than the conquistadors had found their own.

Long before Buffalo Bill's Wild West shows began touring Europe in the late 19th century—and even before the first permanent English settlement in North America, at Jamestown in 1607—indigenous people lived in European courts and cities. Ms Dodds Pennock, a scholar of Mesoamerica, mainly focuses on the peoples of

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Central and South America, which were invaded and exploited by conquistadors from Spain and Portugal. But readers meet scores of individuals ferried across the Atlantic, from Nunatsiavut, Roanoke and Brazil to London, Seville and Rouen.

After trumpeting his "discovery" of America in 1492, on his next trip Christopher Columbus focused on kidnapping Taíno people from the Caribbean to sell as slaves at home. One Taíno boy he "adopted" as his own was the first of many émigrés forcibly Christianised to justify the Spaniards' "civilising mission". For his part, after laying waste to the Aztec capital in 1519, Hernando Cortés sent the gifts offered by its ruler, Moctezuma, back to the Spanish king. These included a hoard of exquisite gold and silver treasures—and at least five emissaries from the Totonac people of Mexico, who barely rated a mention in one observer's breathless report.

Only through oral histories and forensic reading of archival documents can the voices of such travellers be heard, the author writes. By 1600 as many as 2m people from the Americas were enslaved, she recounts, many of them transported to Europe. Some high-ranking travellers came as diplomats trying to broker better conditions for their people; others were forced into service as interpreters. Two such intermediaries arrived in London in 1584 with Sir Walter Ralegh and were instrumental in developing an Algonquian written alphabet (credited solely to Ralegh's navigator, Thomas Hariot).

Meanwhile, for all the splashy biographies of indigenous American crops like coffee and tobacco, says Ms Dodds Pennock, those who grew and sold such goods were overlooked for centuries and are still neglected. Perhaps unconsciously, Europeans emulated indigenous peoples' rituals for smoking and coffee-drinking; but, the author argues, they failed to adopt their system of "reciprocity between the land and its inhabitants". She cautions against romanticising indigenous beliefs, yet notes that "European value-systems tended to extraction and profit, rather than sustainability and the sharing of resources."

The impact on European culture of these travellers is hard to measure. It is clear in language: Quechua provided *jerky* and *quinoa;* the Aztec-Mexica tongue supplied *avocado* and *chocolate*. The book's wider claim—that the indigenous presence shaped European society—is less convincing. Still, the views of native peoples on their colonisers continue to resonate. Michel de Montaigne, a French essayist, inquiring of three Tupinambá from present-day Brazil, reported their wonder at how "among us some men were overstuffed with all sorts of rich commodities while their [compatriots] were begging at their doors, emaciated from hunger." ■

Contemporary art

High planes drifter

Look closely at Peter Doig's paintings. Then look again

Born in Scotland, then brought up in Trinidad and Canada, Peter Doig had a childhood of sharp contrasts: big northern wintry skies and the bright Caribbean sunrise, icy cold and humid tropical heat. These formative years inspired a distinctive body of art that has acquired a discreet but influential following.

Among his collectors are Viktor Pinchuk, a Ukrainian tycoon, and Pierre Chen, a Taiwanese electronics billionaire. Both were intrigued by Mr Doig's early paintings, with their acres of silver birches, veils of flocked snow, white cabins and forsaken canoes. In November 2021 "Swamped", one of his best-known works, sold at Christie's for almost $40m. Instantly recognisable as a Doig, it features a forest lake and one of those trademark canoes, which, wrote Kevin Snowdon, a British poet, are "Mirrored in exactitude in the black dark water".

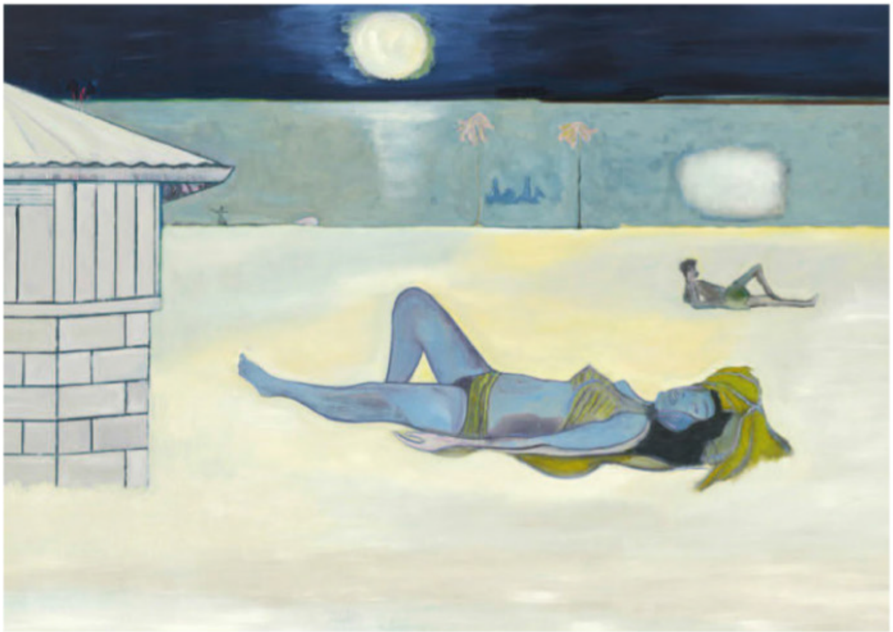
The imagery in Mr Doig's work is only part of its appeal. Another key aspect, argues Richard Shiff, an art historian at the University of Texas at Austin, is the way his paintings "drift" or gradually reveal themselves. The artist uses observation as much as imagination, drawing on film, photography, other artists' paintings and his own dreams to create pictures that develop unpredictably. They call for extended looking. What his work is really about is never immediately obvious.

When Mr Doig begins a painting, he says, he almost never knows where it will end. He once saw a man wringing the neck of a pelican on a beach in Trinidad. The image became a painting years later when he remembered an abstract work by Henri Matisse that he had once seen, showing a shaft of sunlight on trees. The picture that eventually emerged manages to be at once ethereal and menacing: the light is a celestial blue, but the figure of the man is a darkly unknowable silhouette.

Mr Doig, who studied in London at Wimbledon School of Art and Central Saint Martins, came of age at a moment when painting was deeply uncool, especially in Britain. Artists and galleries were preoccupied with sharks pickled in formaldehyde and unmade beds. But he stuck with painting, basing himself in a barn at his parents' house in Canada and patiently honing his craft. He made ends meet by working on film and stage sets, which taught him to manage large canvases. In 1994 he was shortlisted for the Turner prize for a snowy mountain landscape. In 2002 he moved back to Trinidad with his growing family (he has seven daughters and a son).

After decades abroad, Mr Doig has returned again to London. On February 10th he opens a new exhibition at the Courtauld Gallery in two rooms that have hosted shows of Edvard Munch and, more recently, Henry Fuseli, a Swiss Romantic. Mr Doig is the first contemporary artist to be displayed in them.

The Courtauld is also the home of Britain's finest Impressionist collection, and some of the paintings in the new show recall and respond to those works. A depiction of an alpinist by Mr Doig speaks to ▸▸



The Moon under water in "Night Bathers"

Paul Cézanne's view of Lake Annecy, a tropical bather (pictured on previous page) gestures at Paul Gauguin's nude "Nevermore". A mysterious Trinidadian musician echoes the double bassist serenading Georges Seurat's can-can dancers. But the most interesting connection is to Ambroise Vollard, a French art dealer and supporter of Cézanne, Gauguin and Matisse, who was painted by Pierre-Auguste Renoir.

In 1906 Vollard sent André Derain, who with Matisse was among the founders of Fauvism, to London. An exhibition of Claude Monet's paintings of the city had recently been staged in Paris, and the dealer wanted Derain, whom he had just signed on, to try his hand at catching the shifting light over the Thames, its boats and embankments. Over three visits Derain produced a memorable body of work last seen together in 2006—at the Courtauld.

The biggest new picture in Mr Doig's show is a view of Regent's Canal, his first London scene since the 1980s. Artists such as Algernon Newton and Frank Auerbach painted the same area, usually in muddy greys, browns and greens. Mr Doig tips his brush instead at Derain's bright, Fauvist take on London. A little boy with a blue jacket and a pensive look sits at a green table. A cherry red bridge stands against a darkening sky, a highway to uncertainty.

The horizontal planes place you at an angle to the whole scene, as if you have suddenly stumbled upon it. Your eye drifts across the picture and there, to the left, is another figure you may not at first have noticed. A ferryman at the wheel of a barge, he seems to be just about to leave the painting. What is he looking at? What is he thinking? As with all Mr Doig's best work, you are drawn back to look again. ■

Johnson Stranger than fiction

Some popular etymologies are apocryphal. But real ones can be entertaining, too

SALARY, AS THE classically minded know, is a salty term. Not that it is unfit for company, but because it comes from the Latin for "salt": Roman soldiers were given an allowance of salt, or paid in it entirely. It is a tale made for a cocktail party, memorable, revealing of ancient habits—and very probably wrong.

No classical source whatsoever reports that Roman soldiers were paid in salt, said Peter Gainsford, a classicist in New Zealand, in an article on the topic several years ago. They mention salt and pay in the same context, and later etymologists used the similarity of *salarius* (pertaining to salt) and *salarium* (stipend, salary) to assume a salt allowance, or even payment in salt. But, Mr Gainsford calculated, Roman soldiers' daily pay would have bought about 6.6kg (over 14 pounds) of the stuff; had they consumed it all, the army would have collapsed from hypertension before conquering the known world.

There could still be a link between *salt* and *salary*. Mr Gainsford guessed that extra pay for sundries might have been known metaphorically as salt money, even if it was not intended specifically for salt, though that is just a supposition. Then again, the salt-for-pay story, which emerged only in the 18th century, was always guesswork. This providence puts it among what some experts call "folk etymologies": pleasing and memorable just-so stories.

A particularly odd source of these is the collection of purported acronymic derivations of common words. You will hear people say with a straight face that two of the English language's most venerable swear words derive from Fornication Under Consent of the King, and Ship High In Transit. But both words became part of English long before acronyms were common. Acronymic origins are also offered for *golf*, *posh* and *cop*, all false.

Another source of folk etymologies is the purported involvement of famous people. Some believe that *marmalade* was given to Mary, Queen of Scots when she was ill, her French nurse saying "Marie est malade". But notables have far less influence on language than that (thankfully). The belief that pumpernickel bread is named after the kind fed to Napoleon's horse, or *pain pour Nicole*, is another tall tale. So is the theory that *crap* comes from the name Thomas Crapper, inventor of the toilet. Crapper was indeed an entrepreneur of toilets, but they (and the word *crap*) were around before he was born.

Famous people do sometimes invent words, as Norman Mailer did with *factoid*. But such instances are very much the exception. In fact words rarely have sudden and exciting origin stories. In English, the great majority of them descend from a stock of roots shared among the Indo-European family of languages. Some reached English as part of its Germanic Anglo-Saxon bedrock. Others arrived with the French of the Norman conquest, or were coined from Latin and Greek in the 16th and 17th centuries.

All these sub-families are related. Thus *five*, *pentagon* and *quintet* all go back to the same Indo-European root, *penkwe*, filtered through thousands of years of sound changes that took a distinct form in each language group. This is the kind of thing that professional etymologists work out; fascinating stuff, but harder to explain over a drink.

That said, etymological discovery provides endless delights, and has never been easier. The American Heritage Dictionary lists its Index of Indo-European Roots free online, so curious readers can research how *poppycock* and *cacophony* share an old root that means, well, Ship High In Transit. The Oxford English Dictionary traces the gradual changes in a word's form and meaning, buttressed by literary citations over centuries. Etymonline is a free, scholarly resource with similar aims. Jonathan Green's Dictionary of Slang, also free online, is an impeccably researched history of the kinds of words that may not make it into other dictionaries.

And if you want a salty fact, here's one. Should your partner enjoin you to eat less salt, you can push the salad they have placed before you away. Salad, you can declare, comes after all from *herba salata*, Latin for salted vegetables. Alas, you will also have to swear off *salsa* (from the Latin for salted seasonings), and, for that matter, any *sauce* (which is just the French adaptation of *salsa*). You will further have to forgo *sausage* and *salami* (both descended from Latin's *salcisus*, applied to salted meat).

You can do without stories of the salt-and-salary type. Genuine etymology is enough to keep life well-seasoned.

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Economic & financial indicators

Economic data

	Gross domestic product				Consumer prices			Unemployment rate		Current-account balance	Budget balance	Interest rates			Currency units	
	% change on year ago				% change on year ago			%		% of GDP, 2022†	% of GDP, 2022†	10-yr gov't bonds		change on	per $	% change
	latest		quarter*	2022†	latest		2022†					latest,%		year ago, bp	Feb 1st	on year ago
United States	1.0	Q4	2.9	2.1	6.5	Dec	8.0	3.5	Dec	-3.7	-5.5	3.4		158	-	
China	2.9	Q4	nil	3.1	1.8	Dec	1.9	5.5	Dec‡§	2.4	-5.6	2.7	§§	28.0	6.74	-5.5
Japan	1.5	Q3	-0.8	1.4	4.0	Dec	2.5	2.5	Dec	1.6	-6.3	nil		-8.0	129	-11.2
Britain	1.9	Q3	-1.2	4.0	10.5	Dec	7.9	3.7	Oct††	-5.9	-6.8	3.5		219	0.81	-8.6
Canada	3.9	Q3	2.9	3.4	6.3	Dec	6.8	5.0	Dec	-0.6	-2.3	2.9		107	1.33	-4.5
Euro area	1.9	Q4	0.5	3.3	8.5	Jan	8.4	6.6	Dec	0.9	-3.9	2.2		222	0.92	-3.3
Austria	1.7	Q3	-2.8‡	4.9	11.1	Jan	8.6	5.0	Dec	-0.5	-3.6	2.9		263	0.92	-3.3
Belgium	1.9	Q3	0.8	2.9	8.0	Jan	10.3	5.5	Dec	-2.8	-4.9	2.9		254	0.92	-3.3
France	0.5	Q4	0.5	2.6	6.0	Jan	5.9	7.1	Dec	-1.9	-5.1	2.8		242	0.92	-3.3
Germany	1.1	Q4	-1.0	1.7	8.6	Dec	8.7	2.9	Dec	4.2	-3.5	2.2		222	0.92	-3.3
Greece	2.1	Q3	-2.1	5.0	7.2	Dec	9.4	11.6	Dec	-5.8	-4.5	4.3		258	0.92	-3.3
Italy	1.7	Q4	-0.5	3.9	10.1	Jan	8.7	7.8	Dec	-0.9	-5.6	4.3		286	0.92	-3.3
Netherlands	3.1	Q3	-0.9	4.3	9.6	Dec	11.6	3.5	Dec	6.4	-1.4	2.6		244	0.92	-3.3
Spain	2.7	Q4	0.9	5.2	5.8	Jan	8.3	13.1	Dec	0.5	-4.3	3.2		248	0.92	-3.3
Czech Republic	1.6	Q3	-1.2	2.5	15.8	Dec	15.1	2.2	Dec‡	-2.4	-5.1	4.6		124	21.8	-0.9
Denmark	3.2	Q3	1.1	2.8	8.7	Dec	7.9	2.7	Dec	9.0	0.9	2.5		221	6.81	-2.9
Norway	2.5	Q3	6.3	3.5	5.9	Dec	6.4	3.2	Nov‡‡	18.8	12.2	1.4		76.0	9.98	-11.3
Poland	4.5	Q3	4.1	4.5	16.6	Dec	14.4	5.2	Dec§	-3.7	-3.7	6.0		194	4.31	-5.6
Russia	-3.7	Q3	na	-2.3	11.9	Dec	13.2	3.7	Nov§	12.3	-1.1	10.7		123	70.1	9.3
Sweden	0.6	Q4	-2.4	2.9	12.3	Dec	7.7	6.9	Dec§	3.8	-0.5	2.1		173	10.4	-10.9
Switzerland	0.5	Q3	1.0	2.0	2.8	Dec	2.8	1.9	Dec	7.0	-1.0	1.2		117	0.91	1.1
Turkey	3.9	Q3	-0.5	5.1	64.3	Dec	73.5	9.9	Nov§	-8.1	-3.4	10.5		-1131	18.8	-28.8
Australia	5.9	Q3	2.6	3.5	7.8	Q4	6.4	3.5	Dec	2.1	-1.9	3.6		168	1.41	nil
Hong Kong	-4.5	Q3	-10.0	-2.7	2.0	Dec	1.9	3.5	Dec‡‡	4.2	-3.4	3.2		151	7.84	-0.6
India	6.3	Q3	19.3	6.9	5.7	Dec	6.5	7.1	Jan	-2.7	-6.4	7.3		45.0	81.9	-8.7
Indonesia	5.7	Q3	na	5.1	5.3	Jan	4.2	5.9	Q3§	1.0	-2.4	6.6		24.0	14,975	-4.0
Malaysia	14.2	Q3	na	7.3	3.8	Dec	3.4	3.6	Nov§	2.4	-5.3	3.8		8.0	4.27	-1.9
Pakistan	6.2	2022**	na	6.2	27.6	Jan	19.9	6.3	2021	-3.2	-7.8	14.6	†††	364	268	-34.1
Philippines	7.2	Q4	10.0	7.7	8.1	Dec	5.6	4.5	Q4§	-4.0	-7.7	6.1		116	54.5	-6.5
Singapore	2.2	Q4	0.8	3.5	6.5	Dec	6.1	2.0	Q4	18.7	-1.0	2.9		117	1.31	3.0
South Korea	1.3	Q4	-1.5	2.6	5.2	Jan	5.1	3.0	Dec§	1.2	-3.1	3.2		65.0	1,231	-2.1
Taiwan	-0.9	Q4	-4.3	2.4	2.7	Dec	2.9	3.6	Dec	12.7	-1.4	1.2		50.0	30.0	-7.2
Thailand	4.5	Q3	5.0	3.2	5.9	Dec	6.1	1.2	Nov§	-1.8	-5.0	2.5		65.0	32.8	1.2
Argentina	5.9	Q3	7.0	5.7	94.8	Dec	72.5	7.1	Q3§	-1.0	-4.2	na		na	187	-43.9
Brazil	3.6	Q3	1.6	2.8	5.8	Dec	9.3	8.1	Nov§‡‡	-2.9	-4.7	13.2		188	5.07	4.1
Chile	0.3	Q3	-4.6	2.4	12.8	Dec	11.7	7.9	Dec§‡‡	-7.9	-0.3	5.5		-11.0	789	2.4
Colombia	7.1	Q3	6.4	7.6	13.1	Dec	10.2	10.3	Dec§	-5.7	-5.0	11.9		326	4,650	-15.7
Mexico	3.5	Q4	1.6	3.1	7.8	Dec	7.9	3.0	Dec	-1.4	-2.5	8.6		95.0	18.8	9.7
Peru	1.7	Q3	1.8	2.6	8.7	Jan	7.9	6.2	Dec§	-4.8	-1.5	8.1		201	3.85	0.8
Egypt	4.4	Q3	na	6.6	21.3	Dec	13.9	7.4	Q3§	-4.6	-7.4	na		na	30.2	-48.0
Israel	7.5	Q3	1.9	6.1	5.3	Dec	4.5	4.2	Dec	3.4	0.2	3.3		182	3.45	-8.1
Saudi Arabia	8.7	2022	na	8.9	3.3	Dec	2.5	5.8	Q3	12.6	3.3	na		na	3.75	nil
South Africa	4.1	Q3	6.6	2.3	7.5	Dec	7.0	32.9	Q3§	-1.5	-5.5	9.6		33.0	17.2	-11.2

Source: Haver Analytics. *% change on previous quarter, annual rate. †The Economist Intelligence Unit estimate/forecast. §Not seasonally adjusted. ‡New series. **Year ending June. ††Latest 3 months. ‡‡3-month moving average. §§5-year yield. †††Dollar-denominated bonds.

Markets

In local currency	Index Feb 2nd	% change on: one week	Dec 31st 2021
United States S&P 500	4,119.2	2.6	-13.6
United States NAScomp	11,816.3	4.4	-24.5
China Shanghai Comp	3,284.9	0.6	-9.7
China Shenzhen Comp	2,173.6	2.2	-14.1
Japan Nikkei 225	27,346.9	-0.2	-5.0
Japan Topix	1,972.2	-0.4	-1.0
Britain FTSE 100	7,761.1	0.2	5.1
Canada S&P TSX	20,751.1	0.7	-2.2
Euro area EURO STOXX 50	4,171.4	0.6	-3.0
France CAC 40	7,077.1	0.5	-1.1
Germany DAX*	15,180.7	0.7	-4.4
Italy FTSE/MIB	26,703.9	3.2	-2.4
Netherlands AEX	747.7	0.9	-6.3
Spain IBEX 35	9,098.1	1.6	4.4
Poland WIG	60,488.4	-0.1	-12.7
Russia RTS, $ terms	1,002.5	1.6	-37.2
Switzerland SMI	11,200.9	-1.8	-13.0
Turkey BIST	4,713.4	-11.0	153.7
Australia All Ord.	7,728.5	0.5	-0.7
Hong Kong Hang Seng	22,072.2	0.1	-5.7
India BSE	59,708.1	-0.8	2.5
Indonesia IDX	6,862.3	0.5	4.3
Malaysia KLSE	1,485.5	-0.9	-5.2

	index Feb 2nd	% change on: one week	Dec 31st 2021
Pakistan KSE	40,619.9	2.1	-8.9
Singapore STI	3,377.7	0.7	8.1
South Korea KOSPI	2,449.8	0.9	-17.7
Taiwan TWI	15,420.1	3.3	-15.4
Thailand SET	1,685.8	0.2	1.7
Argentina MERV	251,062.1	-3.5	200.7
Brazil BVSP	112,073.6	-1.9	6.9
Mexico IPC	55,018.9	0.3	3.3
Egypt EGX 30	16,407.8	-2.3	37.8
Israel TA-125	1,835.1	0.5	-11.5
Saudi Arabia Tadawul	10,783.7	-0.2	-4.8
South Africa JSE AS	79,816.9	0.1	8.3
World, dev'd MSCI	2,809.9	1.9	-13.1
Emerging markets MSCI	1,042.8	0.1	-15.4

US corporate bonds, spread over Treasuries

Basis points	latest	Dec 31st 2021
Investment grade	144	120
High-yield	426	332

Sources: Refinitiv Datastream; Standard & Poor's Global Fixed Income Research. *Total return index.

Commodities

***The Economist* commodity-price index**

2015=100	Jan 24th	Jan 31st*	% change on month	year
Dollar Index				
All Items	159.7	162.2	3.8	-7.8
Food	137.9	141.8	-0.2	-3.6
Industrials				
All	180.0	181.2	6.9	-10.6
Non-food agriculturals	132.8	134.6	3.8	-18.3
Metals	194.0	195.0	7.6	-8.8
Sterling Index				
All items	197.9	201.1	1.2	1.2
Euro Index				
All items	162.8	165.6	0.9	-4.5
Gold				
$ per oz	1,934.8	1,928.2	5.4	6.7
Brent				
$ per barrel	86.3	85.1	3.7	-4.7

Sources: Bloomberg; CME Group; Cotlook; Refinitiv Datastream; Fastmarkets; FT; ICCO; ICO; ISO; Live Rice Index; LME; NZ Wool Services; Thompson Lloyd & Ewart; Urner Barry; WSJ. *Provisional.

For more countries and additional data, visit **economist.com/economic-and-financial-indicators**

Batting down spillovers

Habitat loss and climate change increase the risk of new diseases

ALTHOUGH SCIENTISTS have not determined how covid-19 emerged, the leading theory is zoonotic spillover (transmission from animals). The death toll from covid has given efforts to prevent future pandemics new urgency. A recent study in *Nature* on bats, which carry SARS-COV-2's closest cousins, finds that the risk of such spillovers is rising—though changes in human activity could return it to safer levels.

If covid is indeed zoonotic, it probably jumped first from bats to a "bridge" animal and then to people. The authors focus on the Hendra virus. This is also excreted by bats and infects horses, which spread it to humans. Of the seven people known to have caught Hendra, four died. The paper studied Hendra spillovers from fruit bats in subtropical eastern Australia, which have risen since 2006. It found that habitat loss combined with climate-induced food shortages explained the increase.

Australian fruit bats eat eucalyptus-tree nectar. Following strong El Niño events, when temperatures in the equatorial Pacific Ocean rise, fewer trees flower. This leads bats to form smaller roosts and eat inferior food, weakening them and probably causing them to excrete more pathogens.

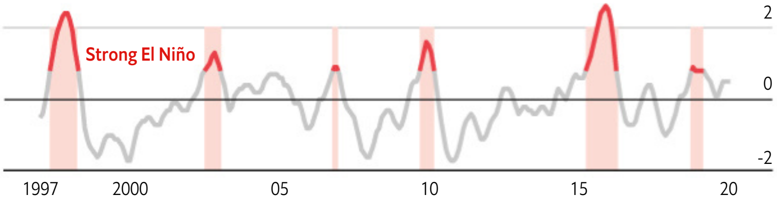
Before 2003, when spillovers were rare, these changes lasted only for brief spells of food scarcity. But since 1996 humans have cleared a third of the bats' winter habitat. Instead of hunting for nectar, bats now spend long periods in roosts near humans. Horses are exposed to those feeding in trees on farms, causing spillovers.

Bats, the only flying mammal, are potent vectors for zoonosis. Another paper in 2022 found that global warming, by forcing animals to change habitats, is expected to double the rate of first encounters (and thus potential viral spread) between mammal species. The study calculated that 90% of first contacts, concentrated in tropical, mountainous parts of Asia and Africa, involve bats, because they travel long distances and interact with lots of species.

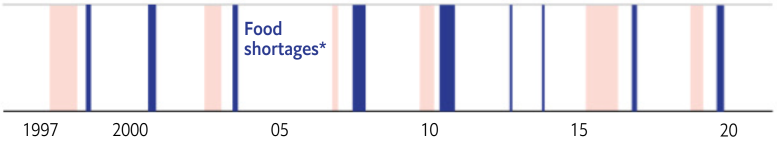
It may be too late to slow viral transmission between animals: the study showed that this will be even more common if climate change is moderate than if it is severe. In contrast, the impact of habitat loss appears reversible. The paper on Australia found that when eucalyptus trees bloomed again, bats flocked back. Regardless of the origins of covid, restoring bats' habitats could help prevent the next pandemic. ■

→ Oceanic temperatures rise during strong El Niño years

Central Pacific Ocean, sea-surface temperature relative to average, °C

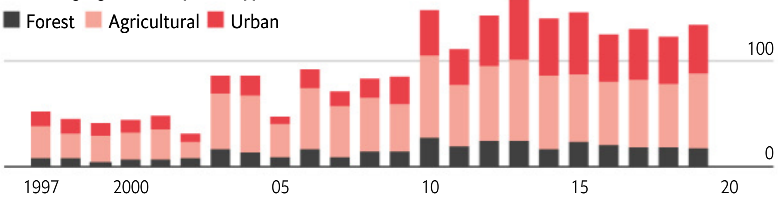


→ This leads to food shortages for bats in eastern Australia

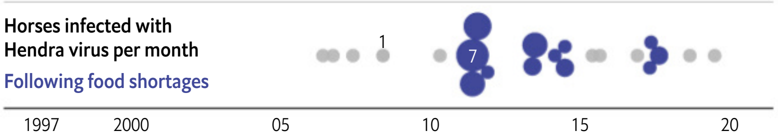


→ Habitat loss has pushed bats into areas occupied by humans and livestock

Bat-foraging areas*, by land type



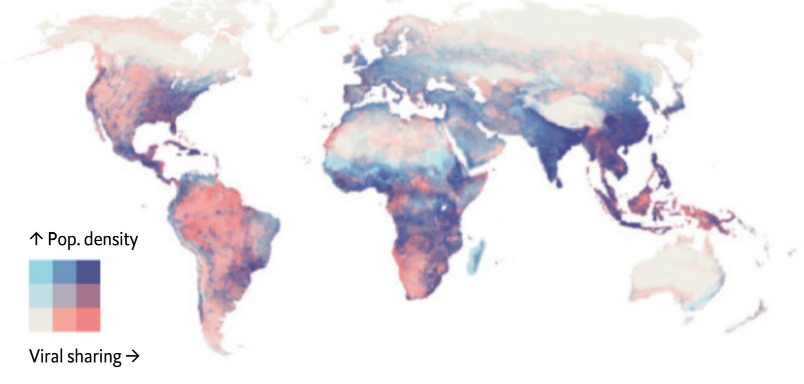
→ This increased transmission of Hendra virus from bats to horses



→ Future spillovers are most likely in biodiverse, populous southern Asia

Novel viral sharing events in 2070, by population density

Based on emissions scenario that aims to keep warming below 2°C†



*Flying foxes in subtropical eastern Australia †RCP2.6

Sources: "Pathogen spillover driven by rapid changes in bat ecology", by Peggy Eby et al., *Nature*, 2022; "Climate change increases cross-species viral transmission risk", by Colin J. Carlson et al., *Nature*, 2022

Wasp-waisted workhorse

Gina Lollobrigida, once dubbed the most beautiful woman in the world, died on January 16th, aged 95

IN 1958 ORSON WELLES made a short black-and-white documentary about Gina Lollobrigida, who had just turned 30. The cigar-chomping American director, whose wife was Italian, confessed that he had long been fascinated how in the torn-blouse iconography of post-war cinema, Italian women surpassed all others at raising, as he put it, the standard of glorious improbability in silhouettes. In a nation of fabulous females, he reckoned Gina was the most fabulous of all.

But (there had to be a but), she also had a mind of her own. It wasn't so much that she had dreams and wanted to express herself, she was ambitious. A loner as a child despite having three sisters, she focused on her plans rather than her playmates. As soon as she could, she left her native town. Up and up and up did Gina keep going, Welles tutted, his voice thick with cigar smoke and patronising disdain. His documentary was never broadcast; the only print went missing for nearly three decades. But years later, after it was rediscovered and finally screened in Italy, this fabulous female became so enraged at his portrayal of her that she persuaded the authorities to ban it.

She was born in the same hilly town east of Rome as Lucrezia Borgia. Not yet 13 when Italy joined the second world war, she saw her home bombed by the Allies. Her father, a furniture-maker, lost all his stock in an air raid and the family fled to Rome where they lived in a single room. After school she would take lessons in singing, dancing and drawing—supplementing the family income with sketches of American GIs and modelling for photo comics known as *fumetti*. Before long, she entered for a Miss Rome beauty contest and won, and then was a runner-up for the title of Miss Italy. In 1950, when she was 23, she was cast as a beauty contestant in a film called "Miss Italia".

Italy, in the immediate post-war years, was rebuilding its shattered towns and villages, but also creating a new future in the film lots known as Cinecittà. On set she gained a reputation for diligently learning her scripts and being unusually hard-nosed about money. Studio executives asked her mother to convince her to accept a part, saying they would pay her a thousand lire. She countered, insisting her price was a million. Of course, they said, and soon she was shooting a new film each month.

It was a studio photograph of her in a bikini that he saw in a magazine, rather than her screen presence, that caught the eye of Howard Hughes. The businessman turned film producer, who had recently acquired RKO Pictures and liked to cast women he was pursuing in films, summoned her to a screen test in Los Angeles. She asked if she could bring her new husband, but she flew on alone when the couple discovered at Rome airport that Hughes had sent only one air ticket.

The tycoon put her up for two months in a hotel suite, with a secretary, a chauffeur and an English teacher. She wasn't allowed out except in Hughes's company; he took her to cheap restaurants and taught her how to swear. Desperate to go home, she eventually signed a contract, but only learned later that it precluded her from making a film with any other studio in America.

She could star in American films if they were shot abroad, and eventually she was in such demand that MGM was prepared to pay the $75,000 fine that was demanded for breach of contract if she returned to make a film in the United States. American studios mostly cast her as a foxy temptress or exotic fantasy; the Queen of Sheba in "Solomon and Sheba" with Yul Brynner or Esmeralda in "The Hunchback of Notre Dame" with Anthony Quinn. But that was to misunderstand her irrepressibly, impenitently Italian nature: hard-working, stubborn and self-willed, but also unbroken.

She may have lacked the wiles and vulnerability that would have made her a finer actress, but her essential Italianness led her to turn her back on Hollywood and embrace the work of her own countrymen, even if Hughes continued for more than a decade to dispatch lawyers to Italy to persuade her to divorce. They would ring the doorbell at the family villa on the outskirts of Rome and end up playing tennis with her husband instead.

Her three finest films—"Bread, Love and Dreams", a small-town romantic comedy about generational change which was set in the same central Italy where she grew up and which pitted personal desire against social duty, and "The Wayward Wife" and "Woman of Rome", both moralistic dramas based on the fiction of Alberto Moravia—brought out an inner fire that was as emblematic of a nation in the throes of reinventing itself as it was revealing of a woman on the cusp of adulthood. All three came out in the same short period in the mid-1950s.

Her disdain for the demands of studio heads and her insistence on managing her career exactly as she wanted had a curious effect on the men she worked with, who wanted either to bed her or to bring her down—or perhaps both. Welles was not the only one. Humphrey Bogart, who starred opposite her in "Beat the Devil", said she made Marilyn Monroe look like Shirley Temple and referred to her often as Gina Lo-lo-frigid-er.

Salad days

The elegant villa on the old Appian Way that leads out of Rome with its gardens and its peacocks, the garlands of emeralds that jewellers would lend her for gala nights, the seemingly unending legal wrangles towards the end of her life with the young lovers and assistants who were accused of trying to steal her fortune—all these gave the impression of a numerate, if vexatious, harpy, who was a bit heavy-handed with the eyeliner and mascara. To those who would listen, though, she always insisted she was a simple country girl from the Italian hills, one who gave her name to a lettuce called *lollo rosso*. Not only were its curly leaves a reminder of her own tousled tresses, its vigorous regrowth whenever it was harvested led it to be classified as a "cut-and-come" variety. A valiant survivor, just like *la Lollo*. ■

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